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Evaluating the Effectiveness of the 2000–2001 NASA CONNECT™ Program

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Summary

NASA CONNECT™ is a research and standards-based integrated mathematics, science, and technology series of 30-minute instructional distance learning (satellite and television) programs for students in grades 6–8. Each of the five programs in the 2000–2001 NASA CONNECT™ series includes a lesson, an educator (lesson) guide, a student activity or experiment, and a web-based component. In March 2001, a self-reported survey booklet was mailed to a randomly selected sample of 1,000 NASA CONNECT™ registrants. In all, 154 surveys (120 usable) were received by the established cut-off date. Most survey questions employed a 5-point Likert-type response scale. Survey topics included (1) instructional technology and teaching, (2) instructional programming and technology in the classroom, (3) the NASA CONNECT™ program (television, lesson guide, classroom activity, web-based activity, and web site), (4) classroom environment, and (5) demographics. About 75 percent of the respondents were female, about 63 percent identified “teacher” as their present professional duty, about 93 percent worked in a public school, and about 60 percent held a master’s degree or master’s equivalency. Regarding NASA CONNECT™, respondents reported that (1) they used the five programs in the 2000–2001 NASA CONNECT™ series; (2) the stated objectives for each program were met; (3) the programs were aligned with the national mathematics, science, and technology standards (4.57); (4) program content was developmentally appropriate for grade level; and (5) the programs in the 2000–2001 NASA CONNECT™ series enhanced and enriched the teaching of mathematics, science, and technology.

Introduction

The NASA Langley Research Center’s Office of Education (OEd) has a primary responsibility within the Agency for distance learning and the integration of instructional technology. Through its Center for Distance Learning, the OEd has developed a suite of five distance learning programs. Collectively, the goals of the five programs include (1) increasing educational excellence; (2) enhancing and enriching the teaching of mathematics, science, and technology; (3) increasing scientific and technological literacy; and (4) communicating the results of NASA discovery, exploration, innovation, and research. NASA CONNECT™ is televised nationally and is used by almost 230,918 educators representing over 8,154,854 students. More information about NASA CONNECT™ can be found at the following web site: <<http://connect.larc.nasa.gov>>.

Evaluation is critical to any program’s success. To determine the effectiveness as well as the credibility and validity of the series, NASA CONNECT™ registrants are surveyed annually. This report contains the quantitative and qualitative results of our attempt to determine the effectiveness of the 2000–2001 NASA CONNECT™ program. The results of the 1998–1999 NASA CONNECT™ program evaluation appear in NASA TM-2000-210542 (Pinelli, Frank, and House, September 2000). The results of the 1999–2000 NASA CONNECT™ program appear in NASA TM-2002-211447 (Pinelli and Frank, February 2002).

NASA CONNECT™ Overview

Produced by the Office of Education at the NASA Langley Research Center in Hampton, Virginia, NASA CONNECT™ is designed to increase scientific literacy, improve the mathematics and science proficiency of students in grades 6–8, and increase the competency of mathematics and science educators. Now in its seventh year of production, the goals of this research and standards-based, Emmy® award-winning distance learning program include (1) showing students the application of mathematics, science, and technology on the job; (2) presenting mathematics, science, and technology as disciplines that require creativity, critical thinking, and problem-solving skills; (3) demonstrating the integration of workplace

mathematics, science, and technology as a collaborative process; (4) raising student awareness about careers that require mathematics, science, and technology; and (5) overcoming stereotyped beliefs by presenting women and minorities performing challenging engineering and science tasks.

The 2000–2001 NASA CONNECT™ series received numerous awards for program achievement, educational content, and video production. Two programs from the NASA CONNECT™ series were awarded Emmy® Awards: *Safety First* was awarded an Emmy® by the San Francisco/Northern California Chapter (NATAS) for best Educational/Instructional Program, and *The Future Flight Equation* was awarded an Emmy® in Children’s Programming by the Washington D.C. Chapter (NASTAS). The 2000–2001 NASA CONNECT™ series, in its entirety, won an award for Excellence in Distance Learning Programming in grades K–12 from the United States Distance Learning Association. The series or individual programs in the series also received sundry awards of distinction and excellence in fields spanning creativity/videography to talent/on-camera, and even web site graphics. For an expanded list of awards that NASA CONNECT™ has earned, please refer to the online awards database at <http://dlearning.larc.nasa.gov/awards_results.cfm>.

NASA CONNECT™ is the oldest program in the NASA K-12 (pre-college) distance learning initiative. In addition to the goals listed in the Overview, NASA CONNECT™ also seeks to create opportunities for parental and community involvement, attempts to link formal education (e.g., the school) with informal education (e.g., libraries, museums, and science centers), and also to link pre-service and in-service education. The NASA CONNECT™ model is research based, instructional rather than educational, result oriented, learner centered, technology focused, and feedback driven. NASA CONNECT™ is free to educators; however, educators must register to receive the lesson (teacher) guides. There are four ways to register for NASA CONNECT™:

- (1) E-mail <connect@edu.larc.nasa.gov>
- (2) online <<http://edu.larc.nasa.gov/connect/>>
- (3) telephone 757-864-6100
- (4) U.S. mail: NASA CONNECT™
Mail Stop 400, Office of Education
NASA Langley Research Center
Hampton, VA 23681-2199

The number of teachers registering for and the number of students viewing each program must be specified.

Rights and Responsibilities

NASA CONNECT™ is a U.S. Government program and is not subject to copyright. No fees or licensing agreements are required to use programs in this series. Off-air rights are granted in perpetuity. Educators are granted unlimited rights for duplication, dubbing, broadcasting, cable casting, and web casting into perpetuity, with the understanding that all NASA CONNECT™ materials will be used for educational purposes. Neither the broadcast nor the lesson guide may be used, either in whole or in part, for commercial purposes without the expressed written consent of NASA CONNECT™.

Production and Delivery

Programs in the 2000–2001 series are live broadcasts. They comply with the specifications found in the National Educational Telecommunications Association (NETA) Common-Sense Guide to Technical

Excellence. Programs run 28 minutes and 30 seconds. Each program is broadcast (delivered) via KU- and C-band satellite transmission. Public Television System (PBS) affiliates, statewide television systems such as T-STAR, district wide television systems, and cable access channels carry NASA CONNECT™. NASA CONNECT™ is also web cast via the NASA Learning Technology Channel. The NASA CONNECT™ web site has the satellite coordinates and broadcast dates and times.

Availability

For a minimal fee, educators can obtain video copies of the NASA CONNECT™ programs and print materials from the NASA Central Operation of Resources for Educators (CORE). Videos and print materials are also available from the NASA Educator Resource Center (ERC).

NASA CORE

15181 State Route 58 South

Oberlin, OH 44074-9799

Phone: (440) 775-1400

Fax: (440) 775-1460

E-mail: nasaco@leeca.esu.k12.oh.us

URL: <http://CORE.spacelink.nasa.gov>

The Importance of Evaluation

Formative and summative evaluation is critical to any program's success. A 2001 CEO Forum School Technology and Reading Report states, "[a]ssessment should become an ongoing part of instruction to inform and enhance teaching and learning and to promote student achievement" (CEO Forum, 2001). NASA CONNECT™ is a tool for enhancement and enrichment; the only way to gauge the effectiveness of that tool is to assess how it is used by classroom teachers. Evaluation is important for numerous reasons and plays an important role in the evolution of distance education (Hawkes, 1996). First, evaluation improves the credibility and validity of a program (Wade, 1999). Second, evaluation can be used to make changes in the program (Ramirez, 1999), which is particularly important because of the dynamism inherent both in education and technology. According to Dr. Lawrence T. Frase, Executive Director of the Research Division of Cognitive and Instructional Science at the Educational Testing Service, "The major issue for educational technology in the next millennium will be the effectiveness of its adaptation to social, scientific, and political change" (*THE Journal*, 2000). Third and finally, evaluation can help determine the effectiveness of a program (Hazari and Schnorr, 1999). Because of the wide array of information that can be reaped from the evaluation process, the Office of Education conducts an ongoing quantitative and qualitative assessment of NASA CONNECT™.

The Office of Education continues to develop new methods of evaluating NASA CONNECT™. The 2000–2001 NASA CONNECT™ season is the second one that can be evaluated from a longitudinal perspective (by comparing the 2000–2001 NASA CONNECT™ evaluation data with the 1998–1999 and 1999–2001 NASA CONNECT™ evaluation data). These comparisons will provide the Office of Education with a more realistic benchmark from which to evaluate the NASA CONNECT™ series. Moreover, national data concerning teacher demographics, classroom environments, and teacher perceptions of instructional technology have also been infused into the 2000–2001 NASA CONNECT™ evaluation report to allow the data received through the NASA CONNECT™ evaluation process to be compared to other national studies. In future seasons, the Office of Education may seek to expand evaluation to also include classroom observation by skilled observers and student feedback by means of short surveys. In summary, the Office of Education continually strives to improve the evaluation process by creating more

diverse and in-depth measurement techniques. As stated by Michael Hawkes (1996), “[b]y using an array of evaluation techniques and including everyone involved in the delivery of distance learning (parents, teachers, students) in data collection activities, evaluation tasks will not appear as ominous as they once did. More importantly, school leaders will be able to assess whether distance education technologies are part of the solution to improved learning and instruction” (p. 33).

Methodology

A sample of 1,000 registrants was randomly drawn from the NASA CONNECT™ database. A mail (self-reported) survey/questionnaire was sent to the sample group in early March 2001. The survey contained 109 questions, 10 of which dealt with demographics (appendix A). Those receiving the survey could select from three options: (1) they could complete the survey and return it, (2) they could write “not applicable” on the survey and return it, and (3) they could ask to receive a free copy of the final assessment report. A total of 120 usable surveys were received by the established cut-off date. Additionally, 34 surveys marked “not applicable” were also received by the established cut-off date. Reasons given for not completing the survey were logged in the database (appendix B). The overall response rate for the 2000–2001 NASA CONNECT™ evaluation project was approximately 10 percent.

In addition to the quantitative data collected, the Office of Education also recorded all qualitative data that was received during the 2000–2001 NASA CONNECT™ season. These comments came from the evaluation booklet, e-mail correspondence with educators, traditional mailings to educators, and telephone conversations. Comments were divided into two categories: Solicited Comments to Qualitative Questions in the 2000–2001 Evaluation Booklet (Appendix C) and Unsolicited Qualitative Comments (Appendix D). The qualitative data collected were also incorporated into the changes suggested for the 2000–2001 NASA CONNECT™ season.

Demographics

The evaluation booklet contained a variety of demographic questions, the answers to which could be used to establish the respondents profile, the classroom environment, and teacher/student computer use. Demographic findings for survey respondents follow:

- 89 of 119 respondents were female.
- 43 respondents were located in suburban school districts, 38 in rural school districts, and 37 in urban school districts.
- 110 respondents identified “classroom teacher” as their present professional duty.
- 111 of 120 respondents worked in a public school.
- 70 of 116 respondents held a master’s degree or master’s equivalency.
- 101 of 118 respondents identified themselves as Caucasian.
- The mean and median ages of the respondents were 45.85 and 47, respectively.
- The mean and median “years as a professional educator” were 17.78 and 17, respectively.
- 113 of 120 respondents owned a personal computer.

- 87 of 117 respondents indicated membership in a professional (national) mathematics or science educational organization.
- The mean and median number of years respondents have used NASA CONNECT™ were 2.44 and 2 years, respectively.

The demographic makeup of the 2000–2001 respondents did not differ significantly from the makeup of the 1999–2000 respondents, contrasting the significant change in the demographic makeup between the 1998–1999 and 2000–2001 seasons.

Presentation of Data

The survey questions were divided among nine topics. The respondents were asked to react to questions about instructional technology and programming in the classroom and to items specifically related to the NASA CONNECT™ program series. Findings for the remaining nine topics are presented in this section. The topic results are reported in terms of mean ratings when the survey items involved a 5-point Likert scale and in percentages when the questions required other responses. Each question was calculated by using the number (n) of responses to that particular question rather than from the total population of respondents (N). A longitudinal comparison of data from the 1998–1999, 1999–2000, and 2000–2001 program year evaluations can be found in appendix E to support comparisons made between datasets.

Topic 1. Instructional Technology and Teaching

Respondents were asked to rate seven statements related to instructional technology and teaching (table 1). The highest mean rating ($\bar{x} = 4.61$) was given to the statement that *instructional technology enables teachers to be more creative*. The next highest mean ratings were given to the statements that *technology accommodates different learning styles* ($\bar{x} = 4.58$), *increases student motivation and enthusiasm for learning* ($\bar{x} = 4.45$), and *enables teachers to teach more effectively* ($\bar{x} = 4.44$). At slightly lower mean ratings, the respondents reported that *instructional technology increases student learning and comprehension* ($\bar{x} = 4.30$) and *student willingness to discuss content and exchange ideas* ($\bar{x} = 4.18$). The lowest mean rating ($\bar{x} = 3.98$) was given to the statement that *instructional technology is effective with virtually all students*.

Table 1. Instructional Technology and Teaching

Question: Instructional technology...	Mean	Median	Standard deviation	Min.	Max.	Number of responses (n)
enables teachers to teach more effectively.	4.44	5	0.77	3	5	123
enables teachers to accommodate different learning styles.	4.58	5	0.61	2	5	123
enables teachers to be more creative.	4.61	5	0.65	2	5	124
increases student learning and comprehension.	4.30	5	0.81	2	5	124
increases student willingness to discuss content/exchange ideas.	4.18	4	0.86	1	5	123
increases student motivation and enthusiasm for learning.	4.45	5	0.70	3	5	124
is effective with virtually all types of students.	3.98	4	1.09	1	5	124

Min. is minimum; Max. is maximum.

Topic 2. Instructional Programming and Technology in the Classroom

Instructional Programming

Respondents were asked to react to four statements about instructional technology programming intended for use in the classroom (table 2). Higher mean ratings were given to the statements that *schools have increasingly greater access to instructional technology programs* ($\bar{x} = 4.10$) and that *the majority of the programs are of good quality* ($\bar{x} = 3.94$). Lower mean ratings were assigned to the statements that *the majority of the programs are not easily broken into “teachable” units* ($\bar{x} = 2.64$) and that *the majority of the programs are not appropriate (for example, too advanced or too basic) for their students* ($\bar{x} = 2.57$). It is important to note that for all four of these questions, optimistic teacher attitudes concerning instructional programming have increased since the 1999–2000 survey, although these are still fairly conservative means for this respondent pool. In general, teachers surveyed for the 2000–2001 season reported that their perception of access to instructional technology programs and the quality of those programs (including “teachability” and appropriateness) have decreased since the 1998–1999 survey. These results are consistent with one of the conclusions of the 2001 CEO Forum Report on school technology, which stated that for instructional technology to be positively received “[s]tate, district, and local policies, education programs, and resource allotment must be aligned to attain goals” (CEO Forum, 2001). Teachers are looking for more than the mere existence of instructional programming; they are looking for programming that is easily accessible and aligned with educational goals.

Table 2. Instructional Programming

Question	Mean	Median	Standard deviation	Min.	Max.	Number of responses (n)
Increasingly, schools have greater access to instructional programs.	4.10	4	1.01	1	5	124
The majority of these programs are of good quality.	3.94	4	0.84	1	5	123
The majority of these programs are not appropriate (i.e., too advanced or too basic) for my students.	2.57	2	1.07	1	5	122
The majority of these programs are not easily broken into “teachable” units.	2.64	3	1.10	1	5	120

Min. is minimum; Max. is maximum.

Instructional Technology

Respondents completing the survey reacted to three statements concerning the actual use of instructional technology in the classroom (table 3). Respondents gave the highest mean rating ($\bar{x} = 4.07$) to the statement (1) that *administrators support and encourage teachers to use instructional technology in the classroom* and (2) that *classrooms are growing increasingly rich in instructional technology* ($\bar{x} = 3.48$). The lowest rating was given to the statement that *teachers are generally positive about introducing/using instructional technology in the classroom* ($\bar{x} = 3.46$).

Respondents were also given a list of seven factors that could prohibit or limit the integration of technology into their instructional programs. They were asked to indicate which of these factors they considered barriers to integrating technology into their instruction (fig. 1). Respondents were not limited to

Table 3. Instructional Technology

Question	Mean	Median	Standard deviation	Min.	Max.	Number of responses (n)
Administrators support and encourage teachers to use instructional technology in the classroom.	4.07	4	1.09	1	5	121
Classrooms are growing increasingly rich in instructional technology.	3.48	4	1.06	1	5	125
Teachers are generally positive about introducing/using instructional technology in the classroom.	3.46	3	0.98	1	5	124

Min. is minimum; Max. is maximum.

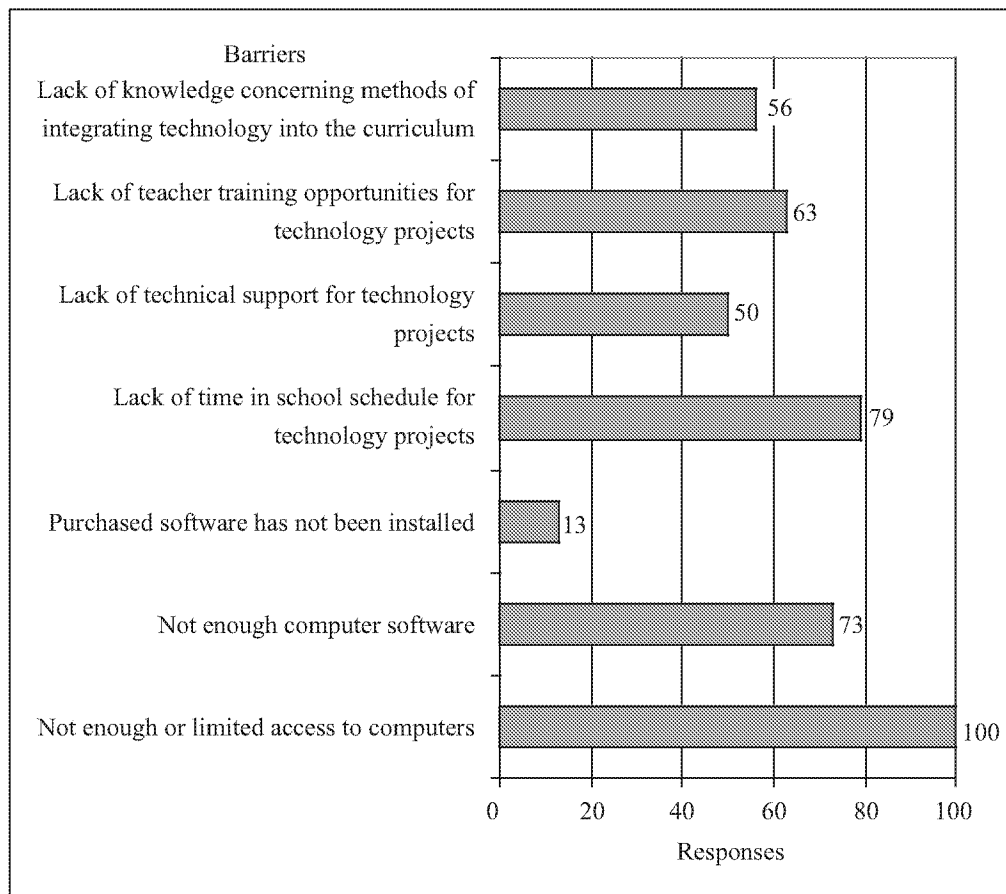


Figure 1. Survey question 15: Which factors are barriers to integrating technology into the instructional program?

selecting one factor; they could select all factors that applied. Respondents indicated that access to computers was the greatest barrier (100 respondents), followed by lack of time in the schedule for technology projects (79 respondents), not enough computer software (73 respondents), lack of teacher training (63 respondents), lack of knowledge about how to integrate technology into the curriculum (56 respondents), and lack of technical support (50 respondents). The failure of purchased software installation was reported as the factor least affecting the integration of technology in the classroom (13 respondents). This distribution mirrors, almost precisely, the findings of last year's survey regarding this question. This consistent response may indicate that the same barriers that continue to plague our respondents have still not been addressed.

Topic 3. Overall Assessment of NASA CONNECT™

Respondents were asked to assess the five programs in the 2000-2001 NASA CONNECT™ series (table 4). The highest mean ratings were given in response to the statement that *the NASA CONNECT™ series program content was aligned with the national mathematics, science, and technology standards* ($\bar{x} = 4.62$) and *the programs presented mathematics, science, and technology as a process requiring creativity, critical thinking, and problem-solving skills* ($\bar{x} = 4.56$). High mean ratings were also given to

Table 4. Overall Assessment of NASA CONNECT™ Program

Question	Mean	Median	Standard deviation	Min.	Max.	Number of responses (n)
The programs met their stated objectives.	4.52	5	0.67	2	5	93
The program content was developmentally appropriate for the grade level.	4.08	4	0.90	1	5	95
The program content was aligned with the national mathematics, science, and technology standards.	4.62	5	0.61	3	5	94
The program content was easily integrated into the curriculum.	3.97	4	1.00	1	5	94
The program content enhanced the teaching of mathematics, science, and technology.	4.47	5	0.65	3	5	92
The programs raised student awareness about careers that require mathematics, science, and technology.	4.43	5	0.75	1	5	90
The programs presented the application of mathematics, science, and technology on the job.	4.42	5	0.72	2	5	94
The programs presented workplace mathematics, science, and technology as a collaborative process.	4.39	5	0.78	2	5	92
The programs presented mathematics, science, and technology as a process requiring creativity, critical thinking, and problem-solving skills.	4.56	5	0.68	2	5	95
The programs presented women and minorities performing challenging engineering and science tasks.	4.43	5	0.69	3	5	90

Min. is minimum; Max. is maximum.

the statements that *the NASA CONNECT™ programs met their stated objectives* ($\bar{x} = 4.52$), *the program content enhanced the teaching of mathematics, science, and technology* ($\bar{x} = 4.47$), and *the programs raised student awareness about careers that require mathematics, science and technology* ($\bar{x} = 4.43$). The next highest means were given in response to the comments that *the programs presented women and minorities performing challenging engineering and science tasks* ($\bar{x} = 4.43$) and that *the programs presented the application of mathematics, science, and technology* ($\bar{x} = 4.42$). Respondents gave the lowest ratings to the statements that *the program content was developmentally appropriate for the grade level* ($\bar{x} = 4.08$), and that *the program content was easily integrated into the curriculum* ($\bar{x} = 3.97$).

Topic 4. NASA CONNECT™ Television/Video Programs

Respondents were asked whether they used the five programs at the time they were received (table 5). The number of “yes” responses varied from 57 respondents (50 percent) for Program 1 to 20 (19 percent) for Program 5. The number of “no” responses varied from 15 (13 percent) for Program 1 to 28 (26 percent) for Program 5. Overall, the number of respondents indicating that they “may use the program in the future” ranged from 60 (56. percent) for Program 5 to 43 (37 percent) for Program 1. See figure 2.

Table 5. How NASA CONNECT™ Programs Are Used in the Classroom

Program uses	Program 1	Program 2	Program 3	Program 4	Program 5
To introduce a curriculum topic, objective, or skill	28	14	18	9	12
To reinforce a curriculum topic, objective, or skill	30	21	27	23	9
As a special interest topic	30	5	9	7	3
For some other purpose	2	3	2	2	2

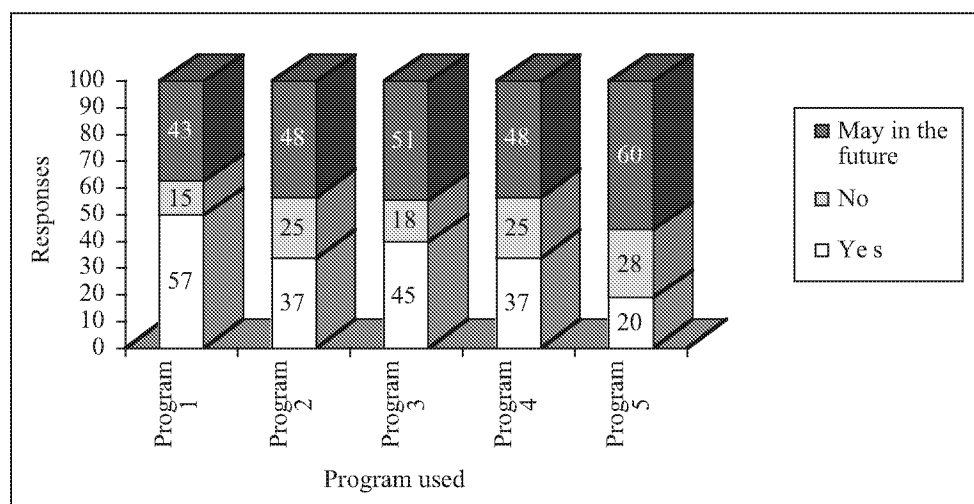


Figure 2. Survey question 16: Use of NASA CONNECT™ television and video programs.

Respondents who used the NASA CONNECT™ programs were asked to identify how they used them in their classes (table 5). Respondents were asked to choose from four possible uses for each of the five programs: (1) to introduce a curriculum topic, objective, or skill; (2) to reinforce a curriculum topic, objective, or skill; (3) as a special interest topic; (4) for some other purpose. The highest number of respondents indicated that they used the programs to reinforce a curriculum topic, objective, or skill (ranging from 9 respondents for Program 4 to 28 respondents for Program 1). The least common reported use of NASA CONNECT™ programs was “for some other purpose.” Respondents who selected this statement were provided space to indicate how they used the NASA CONNECT™ program. Responses ranged from “to supply some additional information/backup lesson” to “science fair.”

Program Delivery

Respondents were then asked whether they viewed each of the seven programs live, taped, or via both methods (table 6). Most respondents did not view the programs live (only 1 to 4 respondents viewed the tapes live); rather the programs were taped and viewed at a later time (19–42 of the respondents reported that they taped the programs). Only a small percentage of respondents reported that they viewed the program both live and taped (only 1 or 2 respondents, depending on the NASA CONNECT™ program). Respondents could also indicate that they did not view the program at all. Responses for “not viewed” ranged from 5 respondents for Program 2 to 10 respondents for Programs 4 and 5. The findings in the program delivery portion are similar to those returned by respondents in the 1999–2000 series evaluation.

Table 6. How NASA CONNECT™ Programs Were Viewed

Question: How did you view the following programs?	Live	Taped	Both	Not viewed
Program 1	4	42	2	9
Program 2	1	27	1	5
Program 3	1	34	2	9
Program 4	2	24	1	10
Program 5	0	19	0	10

Respondents who used the program were then asked to indicate the method by which they received the program (table 7). Five options for program receipt were given: (1) PBS, (2) downloaded it, (3) media specialist taped it, (4) I or someone else taped it, and (5) NASA sent me the tapes. A total of 72 individuals responded to this question, and each respondent was asked to select all the methods of receipt that applied. The most common method of receipt reported was that the evaluator personally taped the programs (29 respondents), followed by a media specialist taping the programs (22 respondents), NASA sending the tapes (19 respondents), and viewing the program via PBS (13 respondents). The least common method of receiving the 2000–2001 NASA CONNECT™ program was downloading the program from the Internet (2 respondents). A follow-up question regarding receipt of the NASA CONNECT™ program inquired whether the respondent experienced any difficulty obtaining any of the programs in the 2000–2001 series. Of the 90 respondents, 37 (41 percent) indicated experiencing difficulty obtaining the programs. This year a greater percentage of users reported taping the programs themselves. The percentage of respondents indicating that a media specialist taped the programs or that NASA sent the tapes decreased from last year.

Table 7. How Programs Were Received

Question: How did you receive the programs?	Yes	No
PBS	13	10
Downloaded it	2	12
Media Specialist taped it	22	10
I or someone else taped it	29	7
NASA sent me the tapes	19	0

Grades Viewing the NASA CONNECT™ Programs

Respondents who used the 2000–2001 NASA CONNECT™ series were asked to report which grade levels viewed the programs (fig. 3). The largest percentage of students viewing the 2000–2001 NASA CONNECT™ series were fifth graders (24 percent) as well as sixth, seventh, and eighth graders (20 percent). The least common grade levels to view the 2000–2001 NASA CONNECT™ programs were grades three (4 percent) and four (12 percent), which is a marked increase from the percentage of third and fourth grade classrooms viewing the 1999–2000 NASA CONNECT™ series. These results were slightly different from the 1999–2000 data in that the median grade level viewing the programs this year was seventh grade, whereas the median grade level last year was eighth grade. Moreover, a lower percentage of respondents indicated that they had difficulty obtaining the programs in the 2000–2001 NASA CONNECT™ series (a 10 percent decrease).

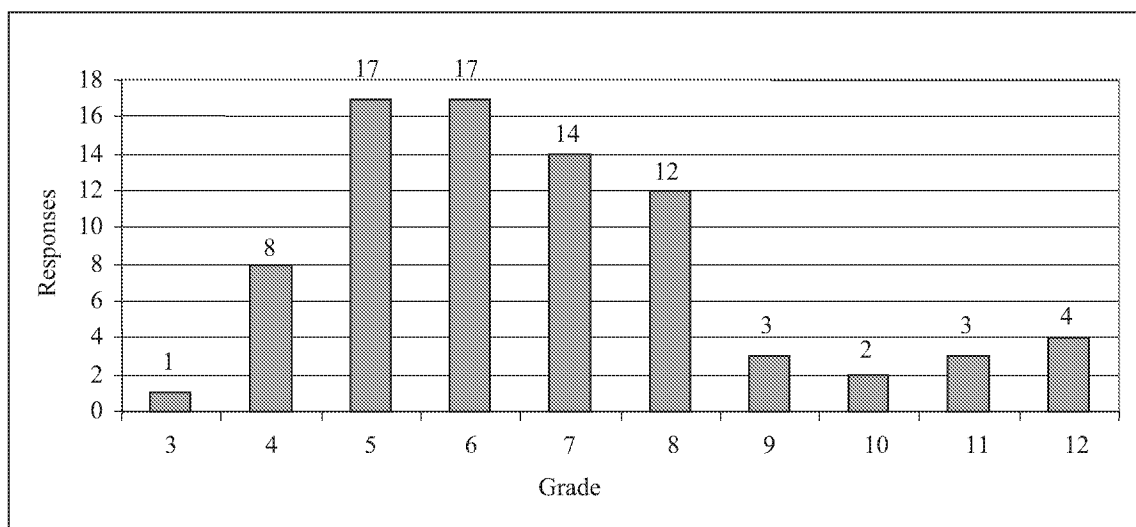


Figure 3. Survey question 19: Grades viewing NASA CONNECT™ programs.

Quality of the Television/Video Programs

The last component of the NASA CONNECT™ television/video program evaluation process asked respondents to evaluate program content and quality by indicating their level of agreement with 16 statements (table 8). The statements receiving the strongest support from the respondents were these: *the programs presented mathematics, science, and technology as disciplines requiring creativity, critical thinking, and problem-solving skills* ($\bar{x} = 4.68$), *the programs demonstrated the application of mathematics, science, and technology on the job* ($\bar{x} = 4.61$), and *the programs illustrated the integration of*

workplace mathematics, science, and technology ($\bar{x} = 4.58$). High marks were also given to the statements that *the programs enhanced the integration of mathematics, science, and technology* ($\bar{x} = 4.57$), *the programs raised student awareness of careers that require mathematics, science, and technology* ($\bar{x} = 4.56$), *the programs were of good technical quality* ($\bar{x} = 4.56$), and *the programs presented women and minorities performing challenging engineering and scientific tasks* ($\bar{x} = 4.47$). The lowest scores were attributed to the statements that *the programs were easily incorporated into the curriculum* ($\bar{x} = 4.03$), *the programs were developmentally appropriate for the grade level* ($\bar{x} = 3.88$), and *the programs were effective with virtually all types of students* ($\bar{x} = 3.84$).

Table 8. Quality of NASA CONNECT™ Television/Video Programs

Question	Mean	Median	Standard deviation	Min.	Max.	Number of responses (n)
The programs were of good artistic quality.	4.39	5	0.69	3	5	71
The programs were of good technical quality.	4.56	5	0.60	3	5	71
The programs enabled me to accommodate different learning styles.	4.21	4	0.83	1	5	70
The programs increased student willingness to discuss/exchange ideas.	4.25	4	0.74	2	5	69
The programs increased student enthusiasm for learning.	4.29	4	0.80	2	5	70
The programs were effective with virtually all types of students.	3.84	4	1.06	1	5	70
The programs were a valuable instructional aid.	4.47	5	0.68	3	5	70
The programs were developmentally appropriate for the grade level.	3.88	4	0.81	2	5	66
The programs were easily incorporated into the curriculum.	4.03	4	0.86	2	5	69
The programs enhanced the integration of mathematics, science, and technology.	4.57	5	0.61	3	5	69
The programs raised student awareness of careers that require mathematics, science, and technology.	4.56	5	0.63	3	5	68
The programs demonstrated the application of mathematics, science, and technology on the job.	4.61	5	0.63	3	5	66
The programs presented mathematics, science, and technology as disciplines requiring creativity, critical thinking, and problem-solving skills.	4.68	5	0.53	3	5	68
The programs illustrated the integration of workplace mathematics, science, and technology.	4.58	5	0.60	3	5	69
The programs presented women and minorities performing challenging engineering and scientific tasks.	4.47	5	0.66	3	5	68
The programs were a positive link between the classroom activity and the web-based activity.	4.34	4	0.74	2	5	64

Min. is minimum; Max. is maximum.

Topic 5. NASA CONNECT™ Lesson Guides

Use of Lesson Guides

Respondents were asked if they used the lesson guides they received as part of their registration with the NASA CONNECT™ series (fig. 4). The percentage of “yes” responses varied from 65 percent for Program 1 to 29 percent for Program 5. The percentage of “no” responses varied from a high of 17 percent for Program 5 to a low of 7 percent for Program 1. Overall, the percentage of respondents indicating that they “may use the program in the future” ranged from 48 percent for Program 5 to 34 percent for Program 1. Compared to last year’s data, a much larger percentage of respondents reported using the lesson guides, as opposed to responding that they “may use them in the future.”

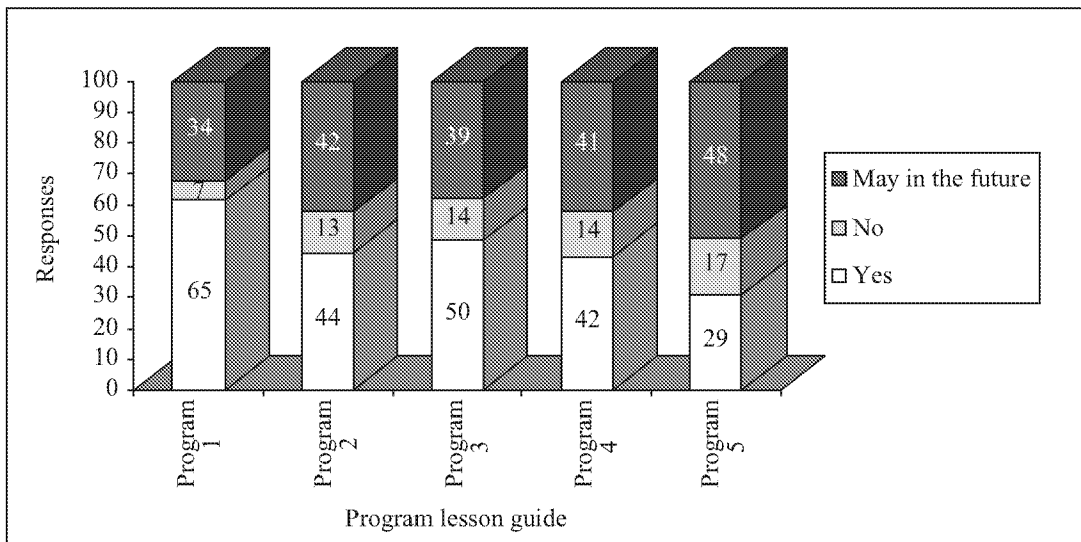


Figure 4. Survey question 36: Use of lesson guides.

Quality of Lesson Guides

The respondents were asked to react to seven statements about the quality of the NASA CONNECT™ lesson guides (table 9). They gave the statement about *the teacher “background” portion being a valuable instructional aid* the highest mean rating ($\bar{x} = 4.48$), followed by the statement that *the lesson guides were a valuable instructional aid* ($\bar{x} = 4.36$). The next highest scores were given to the statement that *the directions were easily understood* ($\bar{x} = 4.28$), *the print and electronic resources were a valuable instructional aid* ($\bar{x} = 4.27$), and *the layout of the lesson guides presented information clearly* ($\bar{x} = 4.31$). The statement that *the cue cards provided a positive link between the video and lesson guide* ($\bar{x} = 4.16$) and the statement that *the lesson guide was easily downloaded from the Internet* ($\bar{x} = 4.00$) received the lowest mean ratings.

Table 9. Quality of NASA CONNECT™ Lesson Guides

Question	Mean	Median	Standard deviation	Min.	Max.	Number of responses (n)
The directions/instructions in the lesson guides presented the information clearly.	4.28	4	0.75	2	5	85
The layout of the lesson guides presented the information clearly.	4.31	4	0.75	2	5	85
The lesson guides were a valuable instructional aid.	4.36	5	0.75	2	5	84
The print and electronic resources in the lesson guide were a valuable instructional aid.	4.27	4	0.77	3	5	81
The cue cards provided a positive link between the video and the lesson guide.	4.16	4	0.83	3	5	56
The teacher “background” portion of the lesson guide was a valuable instructional aid.	4.48	5	0.75	3	5	80
The lesson guide was easy to download from the Internet.	4.00	4	1.13	1	5	34

Min. is minimum; Max. is maximum.

Topic 6. NASA CONNECT™ Classroom Activities/Experiments

Use of Classroom Activities/Experiments

Respondents were asked if they used the classroom activities/experiments included with the NASA CONNECT™ series (fig. 5). The percentage of “yes” responses varied from 60 percent for Program 1 to 28 percent for Program 5. The percentage of “no” responses varied from a high of 19 percent for Program 5 to a low of 11 percent for Program 1. Overall, the percentage of respondents indicating that they “may use the program in the future” ranged from 47 percent for Program 2 to 38 percent for Program 1.

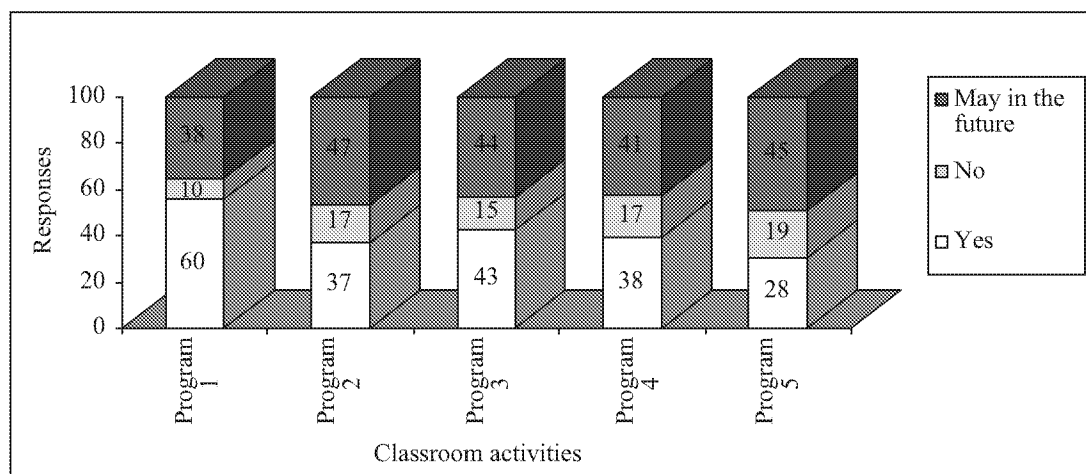


Figure 5. Survey question 46: Use of classroom activities.

Quality of Classroom Activities/Experiments

Respondents were asked to respond to four statements about the program-related classroom activities and experiments (table 10). The quality of the classroom activities and experiments was rated highest for *complementing the lesson for each show* ($\bar{x} = 4.20$). The classroom activities and experiments also were rated high for *ease of use* ($\bar{x} = 3.86$) and *the ease of incorporating the classroom activity into the lesson plan* ($\bar{x} = 3.92$). The lowest mean rating was given to the statement that *programs were developmentally appropriate for the grade level* ($\bar{x} = 3.76$).

Table 10. Quality of NASA CONNECT™ Classroom Activities

Question	Mean	Median	Standard deviation	Min.	Max.	Number of responses (n)
The classroom activity (experiment) was easily incorporated into my lesson plan.	3.92	4	0.93	1	5	72
The classroom activity (experiment) complemented the lesson for each show.	4.20	4	0.80	2	5	64
The classroom activity was developmentally appropriate for the grade level.	3.76	4	1.08	1	5	72
The classroom activities (experiments) were easy for me to use.	3.86	4	1.07	1	5	73

Min. is minimum; Max. is maximum.

Topic 7. NASA CONNECT™ Web-Based Activity

Use of Web-Based Activities

Respondents were asked whether they used the web-based activity included with the NASA CONNECT™ series (fig. 6). The percentage of “yes” responses varied from 15 percent for the activity associated with Program 4 (“Hurricane Game”) to 3 percent for Program 3. The percentage of “no” responses varied from a high of 40 percent for Programs 1, 2, and 3 to a low of 33 percent for Program 4. Overall, the percentage of respondents indicating that they *may use the program in the future* ranged from 56 percent for Program 3 to 51 percent for Program 1. Results were similar for the 1999–2000 NASA CONNECT™ program series.

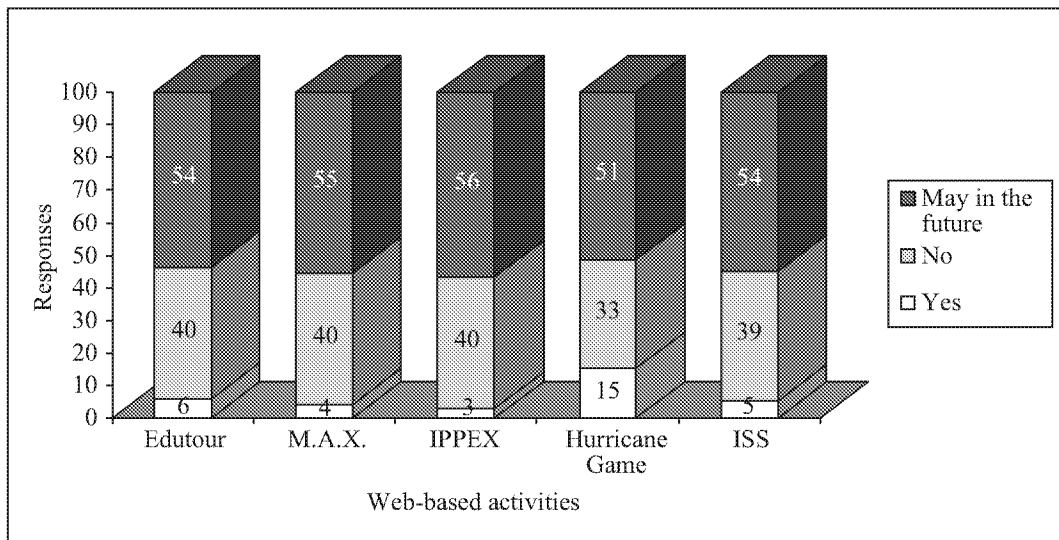


Figure 6. Survey question 53: Use of web-based activities.

Respondents were also asked to indicate how many times they used the web-based activities (fig. 3). The mean frequency of use for the web-based activities was 3.64, with 1 being the least amount of times the activities were used and 12 being the greatest number of times the activities were used. However, it is important to note that only 14 people responded to this question, making results statistically insignificant. See results in the chart below.

Question	Mean	Median	Standard deviation	Min.	Max.	Number of responses (n)
If yes, approximately how many times?	3.64	3	2.73	1	12	14

Min. is minimum; Max. is maximum.

Grades Using NASA CONNECT™ Web-Based Activities

Respondents who used the 2000–2001 NASA CONNECT™ program were asked to report which grade levels used the web-based activities (fig. 7). The largest percentage of students viewing the 2000–2001 NASA CONNECT™ series were fifth graders (24 percent) and sixth, seventh, and eighth graders (20 percent each). Grades 3 and 4 viewed the 2000–2001 NASA CONNECT™ programs the least, 4 percent and 12 percent, respectively. However, as only 24 people responded to this question, no significant conclusions can be drawn from these data.

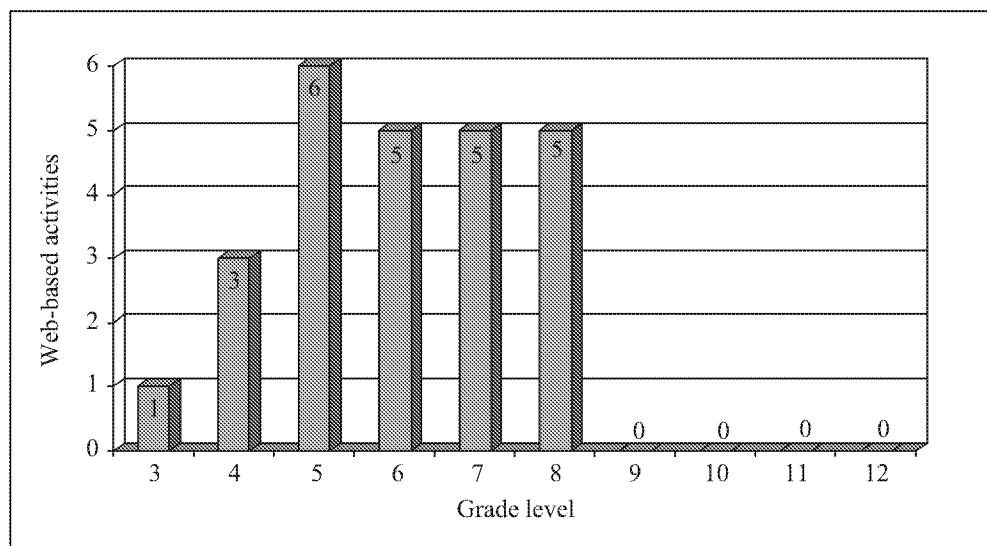


Figure 7. Survey question 59: Grades using NASA CONNECT™ web-based activities.

Quality of Web-Based Activities

The respondents were asked to react to 12 statements about the NASA CONNECT™ programs' web-based activities (table 11). The statements that *the web-based activities would likely be revisited and reused* ($\bar{x} = 4.47$) and that *more online activities should be available on the NASA CONNECT™ web site* ($\bar{x} = 4.42$) received the highest mean ratings from the respondents. They reported that *the content of the web-based activities raised student awareness of careers that require mathematics, science, and technological knowledge* ($\bar{x} = 4.17$) and *enhanced the integration of mathematics, science, and technology* ($\bar{x} = 4.17$). A lower mean rating was given to the statements about *the ability of students to complete the web-based activities in a reasonable amount of time* ($\bar{x} = 3.94$) and that *the web based activities enhanced the integration of mathematics, science, and technology* ($\bar{x} = 4.94/x = 3.37$). The persons returning the survey rated **the content of the web-based activities appropriate for students** ($\bar{x} = 3.88$) and *the ease of integrating the content of the activities into the curriculum* ($\bar{x} = 3.83$) at the lowest mean ratings in this section. Once again, it is important to note that these means, due to the small response rate to these questions, are not statistically significant.

Table 11. Quality of NASA CONNECT™ Web-Based Activities

Question	Mean	Median	Standard deviation	Min.	Max.	Number of responses (n)
The content of the web-based activities was easily integrated into the curriculum.	3.83	4	0.79	2	5	18
The <u>content</u> of the web-based activities enhanced the integration of mathematics, science, and technology.	3.94	4	1.00	2	5	18
The web-based activities raised student awareness of careers that require mathematical, scientific, and technological knowledge.	4.17	5	1.04	2	5	18
Students were able to complete the web-based activities in a reasonable amount of time.	3.94	4	0.83	2	5	17
The web-based activities accommodated various learning styles.	4.00	4	0.91	2	5	18
The content for the web-based activities was appropriate for my students.	3.88	4	0.86	2	5	17
The graphics for the web-based activities was appropriate for my students.	4.17	4	0.79	2	5	18
The web-based activities enhanced the integration of mathematics, science, and technology.	4.17	4	0.79	3	5	18
The web-based activities had a good balance of text and graphics.	4.41	5	0.71	3	5	17
The web-based activities allowed my students to work at their own pace.	4.11	4	0.96	2	5	18
The web-based activities will likely be revisited/reused.	4.47	5	0.72	3	5	17
More online activities should be available on the NASA CONNECT™ web site.	4.42	5	0.72	3	5	31

Min. is minimum; Max. is maximum.

Respondents were also asked whether their students used Norbert's Lab. Of the responses (n = 37), 86 percent indicated that they did not use Norbert's Lab, while 14 percent reported using this aspect of the web-based activity.

Topic 8. NASA CONNECT™ Web Site

Quality of the NASA CONNECT™ Web Site

Those surveyed were asked to respond to eight statements about the NASA CONNECT™ web site (table 12). They gave the highest mean ratings to the statements that *the NASA CONNECT™ web site is visually appealing* ($\bar{x} = 4.55$) and *the design of the web site made the printouts of individual pages legible* ($\bar{x} = 4.52$). They also gave a high rating to the statements that *the web site could be viewed clearly on the monitor* ($\bar{x} = 4.48$), that *there is a good balance between text and graphics on the web site* ($\bar{x} = 4.41$), and that *navigation of the web site is easy* ($\bar{x} = 4.38$). Respondents gave the lowest rating to *the speed of downloading the web site* ($\bar{x} = 4.12$).

Table 12. Quality of NASA CONNECT™ Web Site

Question	Mean	Median	Standard deviation	Min.	Max.	Number of responses (n)
The NASA CONNECT™ web site is visually appealing.	4.54	5	0.58	3	5	71
There is a good balance between text and graphics on the web site.	4.41	5	0.71	2	5	69
The web site is easily navigated.	4.38	5	0.79	1	5	69
When viewed on my monitor, the web site is clearly legible.	4.48	5	0.72	2	5	69
The web site is designed so that printouts of individual pages are legible.	4.52	5	0.59	3	5	64
Pages within the web site download quickly.	4.12	4	0.95	1	5	61
The page lengths are appropriate.	4.33	5	0.81	1	5	66
The links to other sites/pages are current.	4.37	5	0.74	3	5	65

Min. is minimum; Max. is maximum.

Topic 9. Classroom Environment

Instructional Technology Equipment

Respondents were asked about the availability and location of specific kinds of technology in their classrooms, schools, and homes (fig. 8). A television, a VCR, a video camera, a laser disc player, video editing equipment, a computer, and a DVD were the items specified. The respondents were asked to mark all that applied.

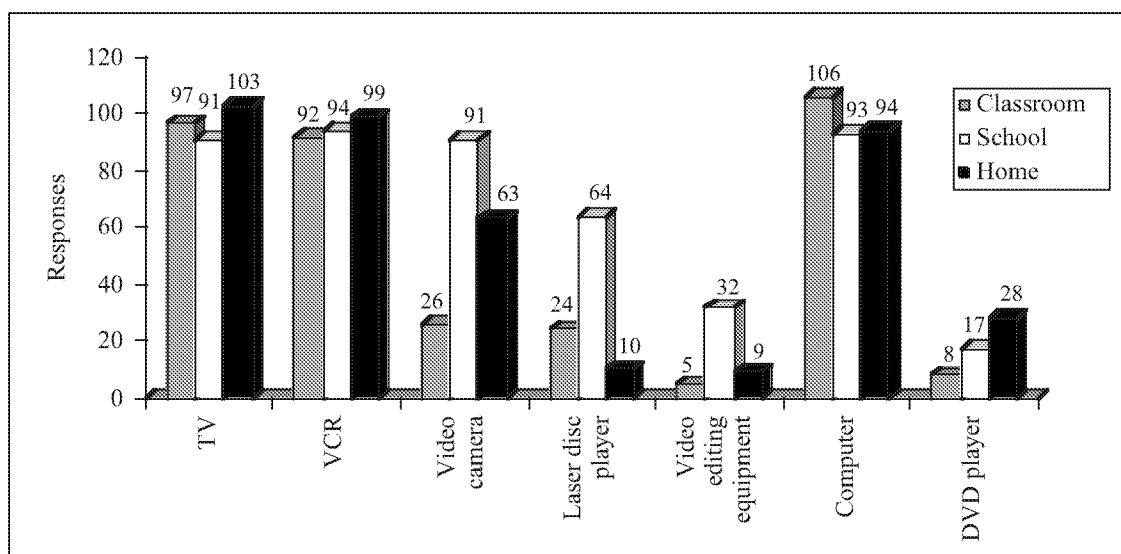


Figure 8. Survey question 89: Availability of specific instructional technology.

Television – Ninety-seven (97) respondents reported they had televisions in their classrooms; ninety-one (91) respondents had televisions in their schools; and one hundred three (103) respondents had televisions in their homes.

VCR – Ninety-two (92) respondents had VCRs in their classrooms, ninety-four (94) had VCRs in their schools, and ninety-nine (99) had VCRs in their homes.

Video Camera – Twenty-six (26) respondents said that they had video cameras in their classrooms, while ninety-one (91) had video cameras in their schools, and sixty-three (63) had video cameras in their homes.

Laser Disc Player – Twenty-four (24) respondents had laser disc players in their classrooms; one hundred sixty-four (64) had laser disc players in their schools, and ten (10) had laser disc players in their homes.

Video Editing Equipment – Only five (5) respondents said they had video editing equipment in their classrooms; thirty-two (32) had video editing equipment in their schools, and nine (9) had the equipment in their homes.

Computer – One hundred six (106) respondents said they had computers in their classrooms; ninety-three (93) had computers in their schools; and ninety-four (94) had computers in their homes.

DVD Player – Eight (8) respondents reported that they had DVD players in their classrooms; seventeen (17) had DVD players in their schools, and twenty-eight (28) had them in their homes.

Computer Accessories

Respondents were asked about the availability and location of specific computer accessories (fig. 9). The accessories were a CD-ROM, a LAN, a District-Wide Network (DWN), and an internet connection. The respondents were asked to mark all choices that applied.

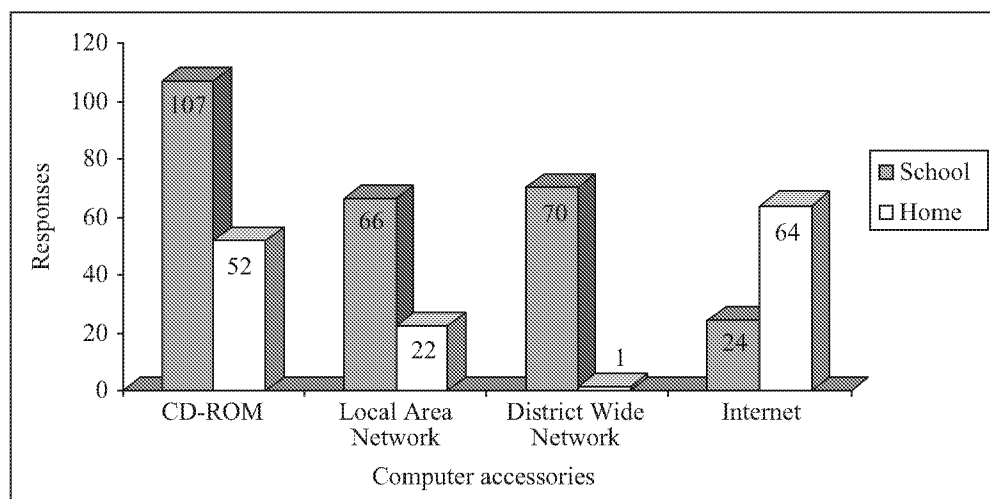


Figure 9. Survey question 90: Availability and location of specific computer accessories.

CD-ROM – One hundred seven (107) respondents had CD-ROMs in their schools; fifty-two (52) respondents had CD-ROM's in their homes.

LAN – Sixty-six (129/66) reported LANs in their schools; twenty-two (22) had LANs in their homes.

District-Wide Network – Seventy (70) respondents reported DWNs in their schools; one (1) respondent had a DWN in the home.

Internet Connection – Twenty-four (24) respondents had internet connections in their schools; sixty-four (64) had internet connections in their homes.

School Computer Operating System

Survey respondents were asked to enter the number of computers in their classrooms. The mean number of computers in each classroom was ($\bar{x} = 3.12/\bar{x} = 2.82$). Survey respondents were then asked to identify the types of computer operating systems in their schools (fig. 10). Twenty-five (25) percent of those surveyed ($n = 115$) reported using a Macintosh system, while sixty-six (66) percent reported using a Windows system. Nine (9) percent reported that both Macintosh and Windows operating systems are used in their classrooms.

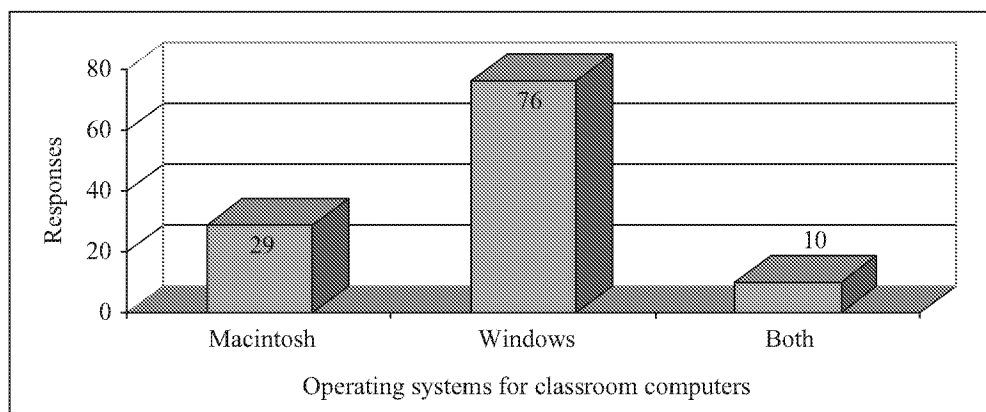


Figure 10. Survey question 92: Computer operating systems used in schools.

Student Use of School Computers

The number of responses ($n = 113$) as to how often a typical student in respondents' schools used a school computer during a given month (fig. 8) were these: Forty-three (43) percent reported that a student used a computer from one to five (1–5) times in a given month; eleven (11) percent reported that a student used a computer from six to ten (6–10) times, and twenty-four (24) percent reported that a student used a computer from eleven to twenty (11–20) times within a given month. Fourteen (14) percent of those surveyed said that a student used a computer in their schools twenty-one to forty (21–40) times in a given month, while eight (8) percent reported forty-one (41) or more times within a month. Last year, the percentage of respondents indicating that typical students used computers 6–10 times a month was much higher and actually exceeded the percentage of those who reported a frequency of 1–5 times per month. Excluding this change, the results were consistent with last year's findings.

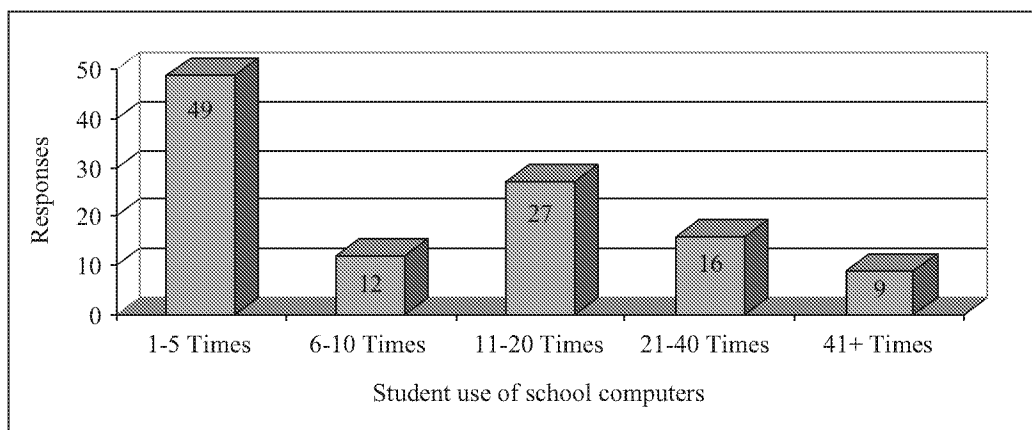


Figure 11. Survey question 93: Typical student use of school computers per month.

Student-to-Computer Ratio

The number of responses ($n = 109$) to how the students in their schools operated computers in the classroom (fig. 12) were these: forty-three (43) percent responded that students operated computers on a ratio of one student per computer; thirty-eight (38) percent reported that the students worked in pairs;

seventeen (17) percent indicated that the students operated the computers in groups (i.e., three or more students per computer); six (6) percent reported that the students worked on the computers as a class. Respondents could mark all boxes that applied.

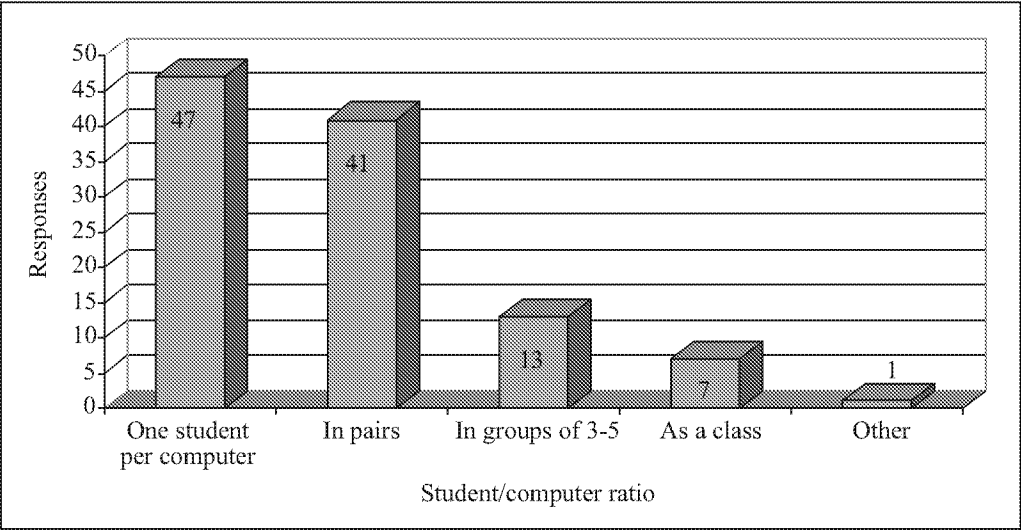


Figure 12. Survey question 94: Student-to-computer ratio.

Classroom Internet Connection

Respondents were asked to indicate how the computers in their classrooms are connected to the Internet (fig. 13). One (1) percent reported using a 28.8 modem; seven (7) percent use a 56-K modem, and eighteen (18) percent use a cable modem. Thirty-nine (39) percent said they use a T-1 line. Six (6) percent said that their classrooms do not have a connection, and thirty-eight (38) percent said that they did not know about their classroom connections.

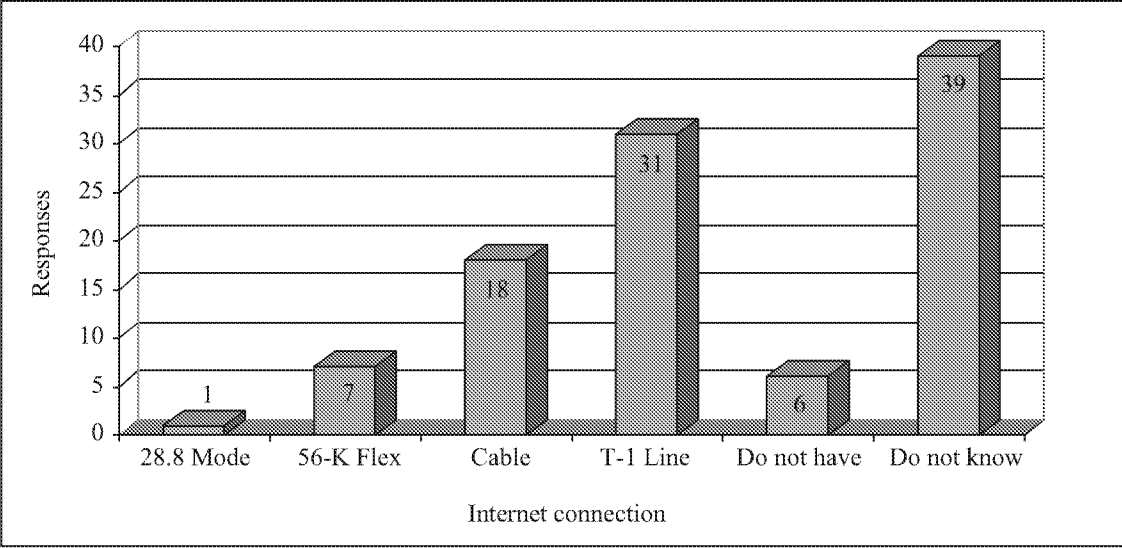


Figure 13. Survey question 95: Type of classroom internet connection.

Purposes of Student Computer Use

Survey respondents were given eleven purposes for student computer use and were asked to mark all that applied (fig. 14). Ninety-seven (97) selected *finding out about ideas and information*. Ninety-nine (99) selected *higher order thinking skills*, and eighty-three (83) selected *improving computer skills*. Eighty-four (84) selected *learning to work independently*. Sixty-eight (68) selected *analyzing information*. Seventy-seven (77) checked *learning to work collaboratively*. Sixty-five (65) checked *remediation of skills not learned well*. Sixty-nine (69) respondents selected the objectives of *expressing ideas in writing*, and sixty-four (64) selected *mastering skills just taught*. Fifty-four (54) selected *presenting information to an audience*, forty-three (43) marked *communicating electronically with others*, and six (6) selected *other objective*. As with data from 1999-2000, *higher order thinking skills* and *finding out about ideas and information* continued to be the most frequently stated objectives for student computer use.

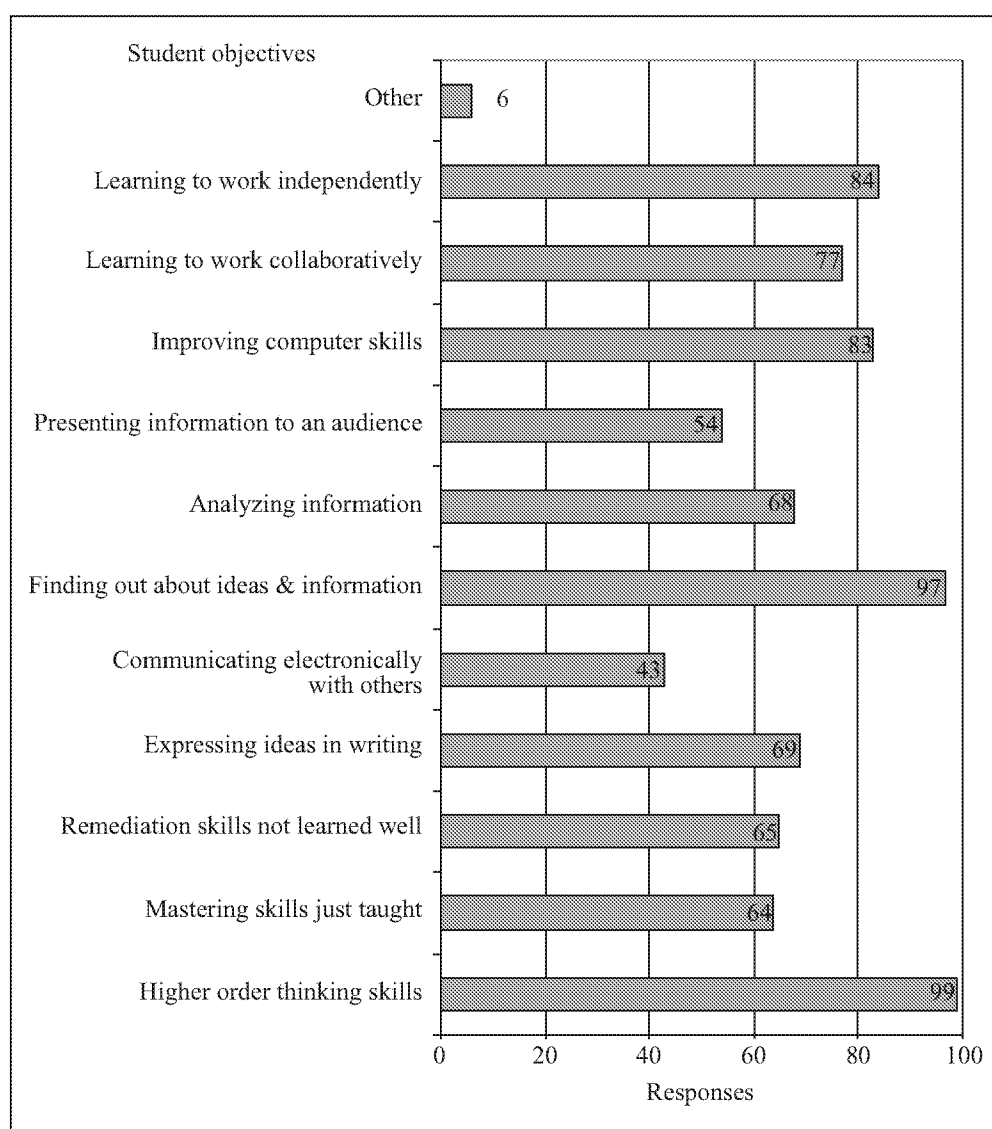


Figure 14. Survey question 97: Objectives for student computer use.

Educators' Professional Use of Computers

We asked educators whether the school-based technology training that had been provided by their schools had improved their computer technology skills (table 13). The mean response on the 5-point Likert scale was $\bar{x} = 3.68$. The respondents were also asked to identify the ways in which they used computers for lesson preparation or other professional activities and to indicate the frequency of each use. They were to mark all uses that applied.

Table 13. School-Based Training

Question	Mean	Median	Standard deviation	Min.	Max.	Number of responses (n)
The school based technology training provided by my school division improved my computer technology skills.	3.68	4	1.41	1	5	101

Min. is minimum; Max. is maximum.

To Record or Calculate Student Grades

Twenty-three (23/20) percent of those responding ($n = 119$) indicated that they did not use computers for recording or calculating student grades. Twenty-four (24/9) percent used the computer for recording or calculating student grades occasionally; twenty-four (24/20) percent used the computer for this purpose weekly, and twenty-nine (29/51) percent used the computer for recording or calculating grades more often than weekly.

To Make Handouts for Students

Three (3/2) percent of those responding ($n = 118$) indicated that they did not use computers to produce handouts for students, while twenty-five (25/19) percent did so occasionally. Twenty-six (26/28) percent used the computer weekly, and forty-five (45/50) percent used the computer more often than weekly to make handouts for students.

To Correspond With Parents

From the number of responses ($n = 119$), indications were that twenty-nine (29/25) percent did not use the computer to correspond with parents, while forty-three (43/42) percent used the computer for that purpose occasionally. Eighteen (18/16) percent reported that they used the computer for corresponding with parents weekly, and one (1/17) percent reported using the computer for that purpose more often than weekly.

To Write Lesson Plans or Related Notes

Fourteen (14/14) percent of those responding ($n = 119$) indicated that they did not use the computer to write lesson plans or related notes, while twenty-nine (29/23) percent did so occasionally. Thirty-three percent (33/28) used the computer for writing lesson plans and related notes weekly, and twenty-four (24/35) percent used the computer for that purpose more often than on a weekly basis.

To Get Information or Pictures From the Internet for Lesson Use

Seven percent (7/8) of those responding (n = 118) reported no use of the computer to get information or pictures from the Internet for use in lessons. Forty-two (42/34) percent reported occasional use of the computer to get information and pictures from the Internet for lessons, while twenty-three (23/23) percent used the computer for that purpose on a weekly basis, and twenty-nine (29/35) percent more frequently than that.

To Use Camcorders, Digital Cameras, or Scanners for Class Preparation

Forty-six (46/46) percent of those responding (n = 118) indicated that they did not use camcorders, digital cameras, or scanners in preparing for their classes. Forty (40/36) percent used camcorders, digital cameras, or scanners for class preparation occasionally; nine (9/12) percent used them weekly; and five (5/7) percent used the items more frequently than weekly.

To Exchange Computer Files With Other Teachers

Forty-nine (49/43) percent of the participants' responses (n = 119) indicated no use of computers to exchange computer files with other teachers, and forty-three (43/39) percent indicated occasional use. Seven (7/10) percent used computers to exchange files with other teachers weekly, and two (2/8) percent used computers for that purpose more frequently than weekly.

To Post Information on the World Wide Web

Sixty-one (61/66) percent of the responses (n = 119) indicated that survey participants did not use the computer to post student work, suggestions for resources, or ideas and opinions on the World Wide Web. Thirty-one (31/24) percent used the computer for posting that kind of information occasionally, seven (7/5) percent reported weekly use for that purpose, and two (2/5) percent reported use more often than weekly.

Interpreting the Findings

Having presented the survey data in the previous section, the next step involves interpreting the data in terms of assessing the quality of NASA CONNECT™. Excluding the survey demographics, interpretations of the findings are presented by topic.

Topic 1. Instructional Technology and Teaching

Considering the data, survey respondents continue to take the position that instructional technology enables teachers to be more creative, to teach more effectively, and to effectively accommodate different learning styles. Furthermore, respondents continue to believe in the power of instructional technology to motivate students to learn and to increase learning and comprehension. Overall, we interpret these findings to mean that survey respondents believe in the power of instructional technology to enhance and enrich the learning process and experience. That belief coincides with the relevant literature and research and would seem to support the large-scale effort on the part of educators to improve school access to educational technology. However, respondents' belief in the benefits of instructional technology is tempered somewhat by their actual "classroom" use of instructional technology and has decreased their perceptions regarding the effectiveness of instructional technology with all types of students.

Topic 2. Instructional Programming and Technology in the Classroom

Instructional Programming

Respondents appear to agree with the statements that schools have greater access to instructional technology programs and that the majority of these programs are of good quality. The extent to which they agree with the statements has increased from the previous year. Furthermore, respondents still indicate that these programs are not easily broken into “teachable” units and that the majority of these programs are not appropriate for their students. Considering the data from both program years, the extent to which survey respondents agree with the statement concerning the good “quality” of instructional programming is greater this year than for the previous program year. Overall, we interpret these findings to mean that survey respondents are still concerned with the ability of instructional programming to meet the instructional needs of their students.

Instructional Technology

Survey respondents reported that administrators generally support and encourage the use of instructional technology in the classroom to a higher degree than they reported last year. Given the increasing amount of “accountability” being applied to administrators to increase test scores, it is encouraging that survey respondents still report that the level of support and encouragement for the use of instructional technology in the classroom has increased. Down sharply from previous years, survey respondents now indicate that classrooms may not be “increasingly rich in instructional technology.” As compared to the 1999–2000 data, respondents were more optimistic regarding their beliefs that administrators support and encourage teachers to use technology and that teachers are positive about using such technology in the classroom. However, this year’s respondent pool gave a lower mean value to technology’s availability in the classroom, thus showing a disparity between the existence of technology and the demand for it in the classroom. This disparity is confirmed by additional findings of this survey and national trends. First, in complete symmetry with last year’s results, respondents once rated “no or limited access to computers” and “lack of time in the school schedule for technology projects” as the two greatest barriers to integrating instructional technology in the classroom. Rational research suggests an increasing amount of pressure on administrators, teachers, and students to pass the state-wide “competency” tests being imposed nationwide. Conventional wisdom indicates that administrators and educators alike are reluctant to allow or to introduce any instructional resource into the classroom that does not clearly support the state standards. Both factors may help explain the differences between teachers’ desire to use technology in the classroom and the availability/usability of such technology within the curriculum.

Topic 3. Overall NASA CONNECT™ Program Assessment

The overall assessment of NASA CONNECT™ is based on the extent to which survey respondents reported that the 10 objectives established for the series were met. Considering the data from both program years, the stated objectives for the NASA CONNECT™ series are being met. Two areas that appear to be problematic, grade level appropriateness and ease of integration, are singled out for attention. These two areas have consistently received lower means for every year of the NASA CONNECT™ formal evaluation process. Grades 6–8 are the established grade level(s) for the NASA CONNECT™ series. Given the low score (i.e., rating) received for this objective and because this year’s score is lower than that of the previous year, it might be wise to investigate the “grade level distribution and use” of the NASA CONNECT™ series. It is important to note that due to previous evaluation data, the grade levels established for NASA CONNECT™ changed from grades 5–8 to 6–8 in 1999–2000. Likewise, given that “ease of integration” received the lowest score for three program years, it might also be wise for program officials to devote both time and resources to further investigate this finding.

Topic 4. The NASA CONNECT™ Instructional Broadcast

NASA CONNECT™ is an instructional resource that consists of a (1) television broadcast, (2) lesson guide, and (3) web-based activity. NASA CONNECT™ is designed to enhance and enrich the instruction of and to facilitate the integration of mathematics, science, and technology for students in grades 6–8. Consequently, the use and perceived quality of the three components (e.g., television broadcast, lesson guide, and web-based activity) by survey respondents would appear to be two criteria for evaluating the NASA CONNECT™ series. Respondents are about evenly divided in terms of “how they use” the broadcasts in the NASA CONNECT™ series. More than 50 percent of the respondents use the broadcasts in the series to either (1) introduce a topic, objective, or skill or (2) to reinforce a topic, objective, or skill. Similarly, the percentage of respondents who indicated that they taped the broadcasts for later use, as opposed to using the broadcasts when they aired, ranged from a low of 65 percent to a high of 79 percent. Furthermore, although the broadcasts in the 2000–2001 NASA CONNECT™ series were used in grades 4 through 12, they were used most often in grades 5–8. Lastly, when considering a list of 15 “quality” indicators, survey respondents gave the instructional broadcasts high marks for artistic, technical, and instructional quality. Overall, we interpret these findings to mean that the broadcasts in the NASA CONNECT™ series are (1) being used by educators; (2) being used by educators as an instructional resource; (3) being used predominantly in the intended grades; and (4) are of high artistic, technical, and instructional quality.

Topic 5. NASA CONNECT™ Lesson Guides

The lesson guide plus the broadcast and the web-based activity are three components that make up a NASA CONNECT™ program. The lesson guide contains the applicable standards, the objectives, resources, lesson extensions, and the hands-on activity. Considering the lesson guides in the 2000–2001 NASA CONNECT™ series, the use rate by survey respondents ranged from a low of 29 percent to a high of 65 percent, significantly higher results than in the previous season. Of those respondents who indicated that they had not used the lesson guides, the responses to the statement, *may use them in the future*, ranged from a low of 34 percent to a high of 48 percent. Overall, the combined *yes* and *may use them in the future* responses ranged from a low of 83 percent to a high of 93 percent. We interpret these findings to indicate that respondents do use the lesson guides and are using them with greater frequency than in years past.

Using a 5-point scale (with 5 being the highest), respondents were asked to *rate* the quality of the lesson guides on each of seven (7) *quality* criteria. The *overall* mean quality rating for the guide was 4.27. The quality factors receiving the highest values were the *background portion of the guide* (4.48) and the *guides are a valuable instructional aid* (4.36). The quality factor, *easy to download from the Internet*, received the lowest rating (4.00). We interpret these findings to indicate that in addition to the guides being used, the overall quality of the guides is high. Finally, given that the lesson guides are available from the NASA CONNECT™ web site as PDF files, any difficulties encountered downloading them from the Internet are best associated with equipment and network considerations or user error and have less to do with the overall quality of the guides.

Topic 6. NASA CONNECT™ Classroom Activities/Experiments

Each NASA CONNECT™ program includes a hands-on activity or experiment that is designed to reinforce and apply the mathematics, science, and technology concepts included in the instructional program and in the classroom. Considering the hands-on activities in the 2000–2001 NASA CONNECT™

series, the use rate by survey respondents ranged from a low of 28 percent to a high of 60 percent. Of those respondents who indicated that they had not used the classroom activities, the responses to the statement, *may use them in the future*, ranged from a low of 38 percent to a high of 47 percent. Overall, the combined *yes* and *may use them in the future*, responses ranged from a low of 81 percent to a high of 90 percent. We interpret these findings to indicate that respondents do use the classroom activities.

Using a 5-point scale (with 5 being the highest), respondents were asked to rate the quality of the classroom activities on each of four (4) *quality* criteria. The *overall* mean quality rating for the classroom activities was 3.94. The quality factors receiving the highest values were *the activity complemented the lesson* (4.20) and *the activity was easily incorporated into my lesson plan* (3.92). The quality factor, *the classroom activities are easy to use* (3.86) received the lowest rating. We interpret these findings to indicate that in addition to the classroom (i.e., hands-on) activities being used, the overall quality of the activities is high. As compared to the 1999–2000 NASA CONNECT™ series, the opinion of the respondents regarding the quality of the classroom activities has decreased. However, the respondents' opinions regarding the ease of incorporating the classroom activities into the lesson plan increased rather dramatically. These results lead us to conclude that, while we need to continually strive to improve the quality of the classroom activities, our efforts to identify and rectify the problems that concern ease of incorporation have been beneficial. The factors which we identified last year as possible reasons for the difficulty in incorporating the classroom activities into the curriculum were (1) the time it takes to conduct the classroom (i.e., hands-on) activity exceeds available “classroom time,” (2) “teachers being uncomfortable using hands-on activities,” and (3) “emphasis being placed on using classroom time to cover only those mathematics, science, and technology concepts included in the various state proficiency tests.” In coming years, we should continue to try reducing the effect of these barriers by improving the quality, usability, and value of the classroom activities.

Topic 7. NASA CONNECT™ Web-Based Activities

Each NASA CONNECT™ program includes a web-based activity that is designed to (1) reinforce and apply the mathematics, science, and technology concepts included in the instructional program and in the classroom and (2) provide teachers an opportunity to introduce technology into the classroom. Considering the web-based activities in the 2000–2001 NASA CONNECT™ series, the use rate by survey respondents ranged from a low of 3 percent to a high of 15 percent. Of those respondents who indicated that they had not used the web-based activities, the responses to the statement, *may use them in the future*, ranged from a low of 51 percent to a high of 56 percent. Overall, the combined *yes* and *may use them in the future*, responses ranged from a low of 60 percent to a high of 67 percent. Respondents who used web-based activities were asked to report the *number of times* they used them. The mean frequency was 3.64. Respondents were also asked to report the grade levels of the students using the web-based activities. Fifth graders were the largest percentage of students using the web-based activities, followed by eighth graders, seventh graders, and sixth graders. Even though the web-based activities appear to be grade-level appropriate, we interpret these findings to indicate that respondents are simply not using the web-based activities, and we speculate that the reasons they are not using them may be the same ones given by respondents for not using technology in the classroom; namely, *no or limited access to computers*, coupled with *lack of time in the school schedule for technology projects*. Clearly, the use/non-use of the web-based activities by NASA CONNECT™ registrants requires further investigation.

Respondents used a 5-point scale (with 5 being the highest) to rate the quality of the web-based activities on each of twelve (12) *quality* criteria. The *overall* mean quality rating for the web-based activities was 4.26. The quality factors receiving the highest values were *the activities will likely be revisited/reused* (4.47) and that *more online activities should be available on the NASA CONNECT™ web*

site (4.42). The quality factor, *content of the web-based activities was easily integrated into the curriculum*, received the lowest rating (3.83). We interpret these findings to indicate that although the web-based activities are not being used, the overall quality of the web-based activities is high and that more online activities should be added to the NASA CONNECT™ web site.

Topic 8. NASA CONNECT™ Web Site

Using a 5-point scale (with 5 being the highest), respondents were asked to *rate* the quality of the NASA CONNECT™ web site on each of eight (8) *quality* criteria. The *overall* mean quality rating for the NASA CONNECT™ web site was 4.41. Furthermore, the web site ratings for the 2000–2001 NASA CONNECT™ program year are consistent with the 1999–2000 findings, which are noticeably higher than the web site rating received for the 1998–1999 NASA CONNECT™ program year. We interpret these findings to indicate that the changes made during the 1999–2000 NASA CONNECT™ program year increased the overall quality of the NASA CONNECT™ web site and that it has carried over into the current ratings.

Topic 9. Classroom Environment

Instructional Technology Equipment

We asked respondents several questions regarding the availability of specific instructional technology equipment (e.g., VCR, DVD player) in their classrooms, schools, and homes. The answers to these questions can “paint a picture” of the existing technology landscape, help explain the “use/non-use” of existing technology-based products, and help plan the introduction of additional technology-based products as part of the NASA CONNECT™ series. Most respondents indicated the presence of TVs, VCRs, and computers in their classrooms, schools, and homes. The more expensive equipment items (e.g., video editing systems and digital cameras) were found in schools and to a far lesser degree in classrooms and homes, with the newer technology items (e.g., DVD players) found in the home and to a lesser degree in schools and classrooms. What these results don’t tell us, however, is what access teachers have to this equipment; how much, if any, training educators have had using this equipment; how many computers educators may have in their classrooms; and the amount of time they have to use a computer or any other technology equipment.

Computer Accessories

We also asked respondents about the availability of specific computer equipment and accessories in their classrooms, schools, and homes. Again, the answers to these questions can “paint a picture” of the existing technology landscape to help explain the use/non-use of existing technology-based products and to help plan the introduction of additional technology-based products as part of the NASA CONNECT™ series.

Student Use of Computers

We attempted to determine the number of computers in schools and the type of operating system(s) used on these computers. The average number of computers per classroom was slightly less than 3. Most respondents reported that their systems were PC-based, Mac-based, and a “mixture of the two” being a distant third. We also wanted to know how often a typical student used a classroom computer in a month. About 43 percent indicated that the typical student uses a computer 1 to 5 times a month, 11 percent reported a use rate of 6 to 10 times a month, and 24 percent reported a use rate of 11 to 20 times a month.

Educator Use of Computers

“The training received by teachers and educators is essential to the success of technology use in the classroom” (Thomas, 2000). “Today’s teachers are asked to integrate technology and incorporate media into their classes to enhance teaching while improving student learning. Money is poured into schools to supply labs with state-of-the-art equipment and software. However, all the best intentions in the world are impossible to carry out if teachers are not trained sufficiently, are not comfortable enough with the software and equipment, and do not really believe in the benefits of current technology” (Ariza, Knee, and Ridge, 2000). Acknowledging this reality, we asked respondents several questions about training and computer use. We also asked them to rate the helpfulness of the school-based technology training provided by their school or school system. Most reported that the training was moderately helpful. Respondents reported that they most often used a computer for such administrative duties as recording and calculating grades and for such educational purposes as searching the Internet for lesson use, preparing lesson plans, and making handouts for students. Respondents reported that they least often used computers to operate technology-based equipment, to exchange files with other educators, and to post student work assignments on the World Wide Web. These findings are virtually the same as those reported for the 1998–1999 and the 1999–2000 NASA CONNECT™ program years.

Concluding Remarks

A self-reported survey was sent to individuals randomly selected from the database of NASA CONNECT™ registrants. Based on the responses, the following facts have been established for the 2000–2001 NASA CONNECT™ program year. NASA CONNECT™ is an instructional resource that is designed to integrate mathematics, science, and technology in grades 6–8. According to survey respondents, educators view NASA CONNECT™ as a beneficial instructional resource, and it is used in a manner befitting one. For example, (1) the instructional broadcast is most often taped for use at a later date rather than being used “live”; (2) some parts of a NASA CONNECT™ program are used more frequently than other parts; and (3) NASA CONNECT™ is used most often to reinforce topics, objectives, or skills. Collectively, these data support the continued production of NASA CONNECT™. Furthermore, it appears that the changes and improvements that were implemented as a result of the 1998–1999 and 1999–2000 evaluations were well received by NASA CONNECT™ registrants.

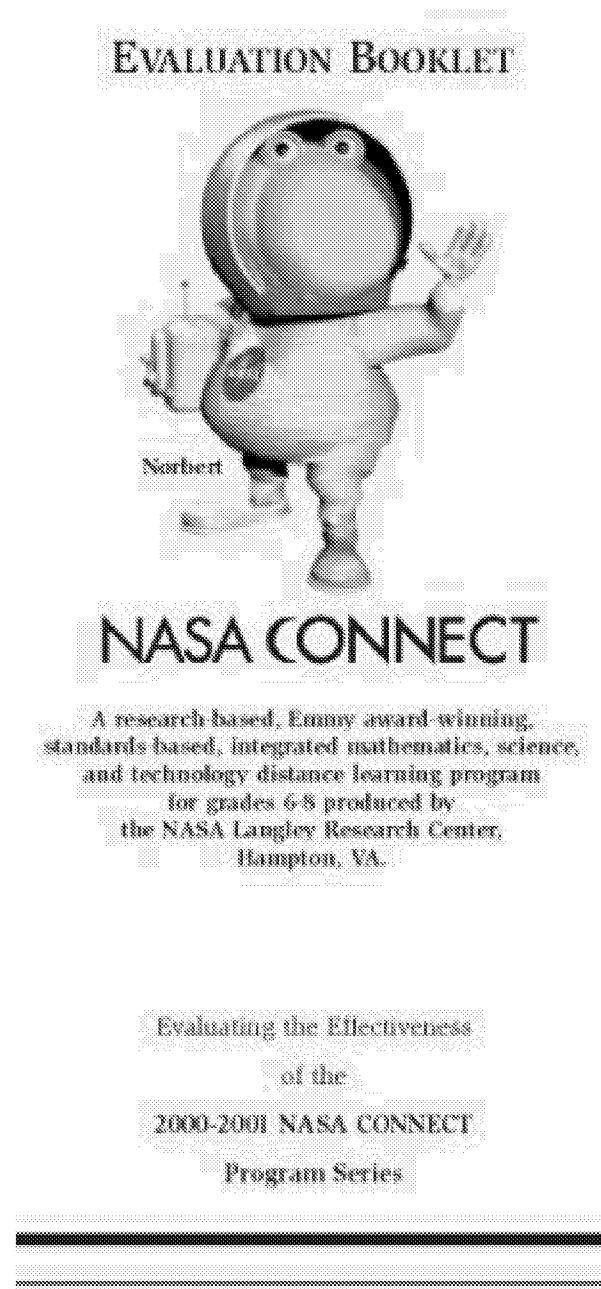
However, in next year’s program evaluation, it would appear that additional effort should be directed to determining the low use of the NASA CONNECT™ web-based activities. The 2000–2001 NASA CONNECT™ program year data lead one to conclude that the activities are educationally sound. If such is the case, what factor or factors explain why the NASA CONNECT™ web-based activities are not used more? What steps can be taken to increase their use? Lastly, some of the instructional technology questions still appear to be confusing. Despite attempts to clarify these questions, it appears that respondents are still having difficulty answering them. Given the ability of these questions to “paint a picture” of the existing technology landscape, to help explain the use/non-use of existing technology-based products, and to help plan the introduction of additional technology-based products as part of the NASA CONNECT™ series, accurate and reliable responses become an imperative.

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Appendix A

2000–2001 NASA CONNECT™ Evaluation Booklet



**INSTRUCTIONAL TECHNOLOGY
AND TEACHING**

Please indicate (circle the number) the extent to which you disagree or agree with the following statements about instructional technology and classroom teaching.

Instructional technology . . .

1. enables teachers to teach more effectively.
- | | | | | | |
|----------|---|---|---|-------|------------|
| Disagree | | | | Agree | No Opinion |
| 1 | 2 | 3 | 4 | 5 | 9 |

2. enables teachers to accommodate different learning styles.
- | | | | | | |
|----------|---|---|---|-------|------------|
| Disagree | | | | Agree | No Opinion |
| 1 | 2 | 3 | 4 | 5 | 9 |

3. enables teachers to be more creative.
- | | | | | | |
|----------|---|---|---|-------|------------|
| Disagree | | | | Agree | No Opinion |
| 1 | 2 | 3 | 4 | 5 | 9 |

4. increases student learning and comprehension.
- | | | | | | |
|----------|---|---|---|-------|------------|
| Disagree | | | | Agree | No Opinion |
| 1 | 2 | 3 | 4 | 5 | 9 |

5. increases student willingness to discuss content/exchange ideas.
- | | | | | | |
|----------|---|---|---|-------|------------|
| Disagree | | | | Agree | No Opinion |
| 1 | 2 | 3 | 4 | 5 | 9 |

6. increases student motivation and enthusiasm for learning.
- | | | | | | |
|----------|---|---|---|-------|------------|
| Disagree | | | | Agree | No Opinion |
| 1 | 2 | 3 | 4 | 5 | 9 |

7. is effective with virtually all types of students.
- | | | | | | |
|----------|---|---|---|-------|------------|
| Disagree | | | | Agree | No Opinion |
| 1 | 2 | 3 | 4 | 5 | 9 |

**INSTRUCTIONAL PROGRAMMING
AND TECHNOLOGY IN THE CLASSROOM**

Please indicate the extent to which you disagree or agree with the following statements about instructional programming and technology.

8. Increasingly, schools have greater access to instructional programs.

Disagree				Agree		No Opinion
1	2	3	4	5		9

9. The majority of these programs are of good quality.

Disagree				Agree		No Opinion
1	2	3	4	5		9

10. The majority of these programs are **not** appropriate (i.e., too advanced or too basic) for my students.

Disagree				Agree		No Opinion
1	2	3	4	5		9

11. The majority of these programs are **not** easily broken into "teachable" units.

Disagree				Agree		No Opinion
1	2	3	4	5		9

12. Administrators support and encourage teachers to use instructional technology in the classroom.

Disagree				Agree		No Opinion
1	2	3	4	5		9

13. Classrooms are growing increasingly rich in instructional technology.

Disagree				Agree		No Opinion
1	2	3	4	5		9

14. Teachers are generally positive about introducing/using instructional technology in the classroom.

Disagree				Agree		No Opinion
1	2	3	4	5		9

**INSTRUCTIONAL PROGRAMMING
AND TECHNOLOGY IN THE CLASSROOM**

15. Which of the following factors are barriers to integrating technology into your instructional program? (Check all that apply.)
- ☐ Not enough or limited access to computers.
 - ☐ Not enough computer software.
 - ☐ Purchased software has not been installed.
 - ☐ Lack of time in school schedule for technology projects.
 - ☐ Lack of technical support for technology projects.
 - ☐ Lack of teacher training opportunities for technology projects.
 - ☐ Lack of knowledge concerning methods of integrating technology into the curriculum.

VIDEO PROGRAMS

The following questions pertain to the five programs in the 2001-2002 NASA CONNECT series.

16. Did you use the following programs? (Please check "✓.")

Program	Yes	No	No, but I may in the future
1. Measurement...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Geometry...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Patterns...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Data Analysis...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Functions...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. If you selected "yes," please (✓) indicate how these programs were used.

	Program				
	1	2	3	4	5
a. To introduce a curriculum topic, objective, or skill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. To reinforce a curriculum topic, objective, or skill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. As a special interest topic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. For some other purpose (please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 18a. If you selected "yes," for question 16, please indicate how these programs were viewed. (Please check "✓.")

	Program				
	1	2	3	4	5
a. Live	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Taped	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Both	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Not viewed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 18b. How did you receive the program? (Please check "✓.")

	Yes	No
1. PBS	<input type="checkbox"/>	<input type="checkbox"/>
2. Downlinked it	<input type="checkbox"/>	<input type="checkbox"/>
3. Media Specialist taped it	<input type="checkbox"/>	<input type="checkbox"/>
4. I or someone else taped it	<input type="checkbox"/>	<input type="checkbox"/>
5. NASA sent me the tapes	<input type="checkbox"/>	<input type="checkbox"/>
6. Other (please specify) _____		

VIDEO PROGRAMS

- 18c. Did you experience difficulty obtaining any of the programs in the 2000-2001 NASA CONNECT series? (Please check "✓.")

☐ Yes ☐ No

19. If you selected "yes," for question 16, please indicate the grade level(s) that viewed the programs. (Please circle.)

3 4 5 6 7 8 9 10 11 12

Please indicate the extent to which you disagree or agree with the following statements concerning the five programs in the 2001-2002 NASA CONNECT series.

20. The programs were of good artistic quality.

Disagree				Agree		No Opinion
1	2	3	4	5		9

21. The programs were of good technical quality.

Disagree				Agree		No Opinion
1	2	3	4	5		9

22. The programs enabled me to accommodate different learning styles.

Disagree				Agree		No Opinion
1	2	3	4	5		9

23. The programs increased student willingness to discuss/exchange ideas.

Disagree				Agree		No Opinion
1	2	3	4	5		9

24. The programs increased student enthusiasm for learning.

Disagree				Agree		No Opinion
1	2	3	4	5		9

25. The programs were effective with virtually all types of students.

Disagree				Agree		No Opinion
1	2	3	4	5		9

26. The programs were a valuable instructional aid.

Disagree				Agree		No Opinion
1	2	3	4	5		9

VIDEO PROGRAMS

27. The programs were developmentally appropriate for the grade level.

Disagree				Agree		No Opinion
1	2	3	4	5		9

28. The programs were easily incorporated into the curriculum.

Disagree				Agree		No Opinion
1	2	3	4	5		9

29. The programs enhanced the integration of mathematics, science, and technology.

Disagree				Agree		No Opinion
1	2	3	4	5		9

30. The programs raised student awareness of careers that require mathematics, science, and technology.

Disagree				Agree		No Opinion
1	2	3	4	5		9

31. The programs demonstrated the application of mathematics, science, and technology on the job.

Disagree				Agree		No Opinion
1	2	3	4	5		9

32. The programs presented mathematics, science, and technology as disciplines requiring creativity, critical thinking, and problem-solving skills.

Disagree				Agree		No Opinion
1	2	3	4	5		9

33. The programs illustrated the integration of workplace mathematics, science, and technology.

Disagree				Agree		No Opinion
1	2	3	4	5		9

34. The programs presented women and minorities performing challenging engineering and scientific tasks.

Disagree				Agree		No Opinion
1	2	3	4	5		9

35. The programs were a positive link between the classroom activity and the web-based activity.

Disagree				Agree		No Opinion
1	2	3	4	5		9

LESSON GUIDE

Please indicate the extent to which you disagree or agree with the following statements concerning the printed lesson guides used for the five programs in the 2001-2002 NASA CONNECT series.

36. Did you use the lesson guides for the following programs? (Please check "✓.")

Program	Yes	No	No, but I may in the future
1. Measurement...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Geometry...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Patterns...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Data Analysis...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Functions...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Guides not received or received in time	<input type="checkbox"/>		

37. If no, please explain and then proceed to question #46:

38. The directions/instructions in the lesson guides were easily understood.

Disagree				Agree	No Opinion
1	2	3	4	5	9

39. The layout of the lesson guides presented the information clearly.

Disagree				Agree	No Opinion
1	2	3	4	5	9

40. The lesson guides were a valuable instructional aid.

Disagree				Agree	No Opinion
1	2	3	4	5	9

41. The print and electronic resources in the lesson guide were a valuable instructional aid.

Disagree				Agree	No Opinion
1	2	3	4	5	9

LESSON GUIDES

42. The cue cards provided a positive link between the video and the lesson guide.

Disagree				Agree		No Opinion
1	2	3	4	5		9

43. The teacher "background" portion of the lesson guide was a valuable instructional aid.

Disagree				Agree		No Opinion
1	2	3	4	5		9

44. The lesson guide was easy to download from the Internet.

Disagree				Agree		Did Not Download
1	2	3	4	5		9

45. Please add any other comments you have concerning the lesson guides:

CLASSROOM ACTIVITY

Please indicate the extent to which you disagree or agree with the following statements concerning the five classroom activities used in the 2000-2001 NASA CONNECT series.

46. Did you use the classroom activity for the following programs? (Please check "✓.")

Program	Yes	No	No, but I may in the future
1. Measurement...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Geometry...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Patterns...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Data Analysis...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Functions...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

47. If no, please explain and then proceed to question #53.

48. The classroom activity (experiment) was easily incorporated into my lesson plan.

Disagree				Agree	No Opinion
1	2	3	4	5	9

49. The classroom activity (experiment) complemented the lesson for each show.

Disagree				Agree	No Opinion
1	2	3	4	5	9

50. The classroom activity (experiment) was developmentally appropriate for the grade level.

Disagree				Agree	No Opinion
1	2	3	4	5	9

51. The classroom activities (experiments) were easy for me to use.

Disagree				Agree	No Opinion
1	2	3	4	5	9

CLASSROOM ACTIVITY

52. Please add any other comments you have concerning the classroom activity:

WEB-BASED ACTIVITY

Please indicate the extent to which you disagree or agree with the following statements concerning the online activities posted on the 2000-2001 NASA CONNECT series web site. (*e.g., Edutour, M.A.X.*)

53. Did you use the web-based activity for the following programs? (Please check "✓.")

Program	Yes	No	No, but I may in the future
1. Edutour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. M.A.X.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. IPPEX	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Hurricane Game	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. ISS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

54. If no, please explain and then proceed to question #71.

55. If yes, approximately how many times?

56. The content of the web-based activities was easily integrated into the curriculum.

Disagree				Agree	No Opinion
1	2	3	4	5	9

57. The content of the web-based activities enhanced the integration of math, science, and technology.

Disagree				Agree	No Opinion
1	2	3	4	5	9

58. The web-based activities raised student awareness of careers that require math, science, and technological knowledge.

Disagree				Agree	No Opinion
1	2	3	4	5	9

WEB-BASED ACTIVITY

59. If you selected "yes," for question 53, please indicate the grade level(s) that used the web-based activity. (Please circle.)

3 4 5 6 7 8 9 10 11 12

60. Students were able to complete the web-based activities in a reasonable amount of time.

Disagree				Agree	No Opinion
1	2	3	4	5	9

61. The web-based activities accommodated various learning styles.

Disagree				Agree	No Opinion
1	2	3	4	5	9

62. The content for the web-based activities was appropriate for my students.

Disagree				Agree	No Opinion
1	2	3	4	5	9

63. The graphics for the web-based activities were appropriate for my students.

Disagree				Agree	No Opinion
1	2	3	4	5	9

64. The web-based activities enhanced the integration of math, science, and technology

Disagree				Agree	No Opinion
1	2	3	4	5	9

65. The web-based activities had a good balance of text and graphics.

Disagree				Agree	No Opinion
1	2	3	4	5	9

66. The web-based activities allowed my students to work at their own pace.

Disagree				Agree	No Opinion
1	2	3	4	5	9

67. The web-based activities will likely be revisited/reused.

Disagree				Agree	No Opinion
1	2	3	4	5	9

WEB-BASED ACTIVITY

68. More online activities should be available
on the NASA CONNECT web site. (Please circle.)

Disagree				Agree	No Opinion
1	2	3	4	5	9

69. Did you or your students use Norbert's Lab?

Yes No

70. Please add any other comments you have
concerning the web-based activity:

NASA CONNECT WEB SITE

The following questions pertain to the web site for the 2000-2001 NASA CONNECT series. Please indicate the extent to which you disagree or agree with the following statements.

71. The NASA CONNECT web site is visually appealing.

Disagree				Agree	No Opinion
1	2	3	4	5	9

72. There is a good balance between text and graphics on the web site.

Disagree				Agree	No Opinion
1	2	3	4	5	9

73. The web site is easily navigated.

Disagree				Agree	No Opinion
1	2	3	4	5	9

74. When viewed on my monitor, the web site is clearly legible.

Disagree				Agree	No Opinion
1	2	3	4	5	9

75. The web site is designed so that printouts of individual pages are legible.

Disagree				Agree	No Opinion
1	2	3	4	5	9

76. Pages within the web site download quickly.

Disagree				Agree	No Opinion
1	2	3	4	5	9

77. The page lengths are appropriate.

Disagree				Agree	No Opinion
1	2	3	4	5	9

78. The links to other sites/pages are current.

Disagree				Agree	No Opinion
1	2	3	4	5	9

OVERALL ASSESSMENT

Please indicate the extent to which you disagree or agree with the following statements concerning the five programs in the 2001-2002 NASA CONNECT series.

79. The programs met their stated objectives.

Disagree		Agree	No Opinion
1 2 3 4 5		9	

80. The program content was developmentally appropriate for the grade level.

Disagree		Agree	No Opinion
1 2 3 4 5		9	

81. The program content was aligned with the national math, science, and technology standards.

Disagree		Agree	No Opinion
1 2 3 4 5		9	

82. The program content was easily integrated into the curriculum.

Disagree		Agree	No Opinion
1 2 3 4 5		9	

83. The program content enhanced the teaching of math, science, and technology.

Disagree		Agree	No Opinion
1 2 3 4 5		9	

84. The programs raised student awareness about careers that require math, science, and technology.

Disagree		Agree	No Opinion
1 2 3 4 5		9	

85. The programs presented the application of math, science, and technology on the job.

Disagree		Agree	No Opinion
1 2 3 4 5		9	

86. The programs presented workplace math, science and technology as a collaborative process.

Disagree		Agree	No Opinion
1 2 3 4 5		9	

OVERALL ASSESSMENT

87. The programs presented math, science, and technology as a process requiring creativity, critical thinking, and problem-solving skills.

Disagree				Agree	No Opinion
1	2	3	4	5	9

88. The programs presented women and minorities performing challenging engineering and science tasks.

Disagree				Agree	No Opinion
1	2	3	4	5	9

COMPUTERS AND ASSOCIATED TECHNOLOGY

The following questions pertain to your classroom, your school, and your home.

89. Do you have the following equipment in your _____? (Please check all that apply.)

	classroom	school	home
Television	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
VCR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video camera	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laserdisc player	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video editing equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DVD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

90. Does your computer have the following in your _____? (Please check all that apply.)

	school	home
CD-ROM	<input type="checkbox"/>	<input type="checkbox"/>
Local area network	<input type="checkbox"/>	<input type="checkbox"/>
Districtwide network	<input type="checkbox"/>	
Internet connection	<input type="checkbox"/>	<input type="checkbox"/>

91. How many computers are in your classroom? (Please enter a number below.)

____ (If "0", proceed to question #96)

92. The operating system used on your classroom computers is
☐ Macintosh ☐ Windows ☐ Both ☐ Other _____

93. In a given month, about how many times does a typical student use a computer in your class? (Please check.)
☐ 1-5 times ☐ 6-10 times ☐ 11-20 times
☐ 21-40 times ☐ 41+ times

94. Generally speaking, how do the students operate the computers in your classroom? (Please check.)
☐ one student per computer
☐ in pairs (2)
☐ in groups of 3 - 5
☐ as a class
☐ other _____

COMPUTERS AND ASSOCIATED TECHNOLOGY

95. My classroom connection to the Internet uses a_____. (Please check.)

☐ 28.8 modem
☐ 56-K flex modem
☐ cable mode
☐ T-1 line
☐ do not have one
☐ do not know

96. The school-based technology training provided by my school division improved my computer technology skills.

Disagree			Agree		No	No school-based
					Opinion	training provided
1	2	3	4	5	7	9

97. Which of the following are among the objectives you have for student computer use? (Please check all that apply.)

☐ Higher order thinking skills
☐ Mastering skills just taught
☐ Remediation of skills not learned well
☐ Expressing ideas in writing
☐ Communicating electronically with others
☐ Finding out about ideas and information
☐ Analyzing information
☐ Presenting information to an audience
☐ Improving computer skills
☐ Learning to work collaboratively
☐ Learning to work independently
☐ Other (describe)_____

98. In which of these ways do you use computers to prepare lessons or in other professional activities? (Please check.)

- a. to record or calculate student grades

☐ Do not use
☐ Occasionally
☐ Weekly
☐ More often

- b. to make handouts for students

☐ Do not use
☐ Occasionally
☐ Weekly
☐ More often

COMPUTERS AND ASSOCIATED TECHNOLOGY

- c. to correspond with parents
 - ☐ Do not use
 - ☐ Occasionally
 - ☐ Weekly
 - ☐ More often

- d. to write lesson plans or related notes
 - ☐ Do not use
 - ☐ Occasionally
 - ☐ Weekly
 - ☐ More often

- e. to get information or pictures from the Internet for use in lessons
 - ☐ Do not use
 - ☐ Occasionally
 - ☐ Weekly
 - ☐ More often

- f. to use camcorders, digital cameras, or scanners to prepare for class
 - ☐ Do not use
 - ☐ Occasionally
 - ☐ Weekly
 - ☐ More often

- g. to exchange computer files with other teachers
 - ☐ Do not use
 - ☐ Occasionally
 - ☐ Weekly
 - ☐ More often

- h. to post student work, suggestions for resources, or ideas and opinions on the World Wide Web
 - ☐ Do not use
 - ☐ Occasionally
 - ☐ Weekly
 - ☐ More often

DEMOGRAPHICS

These questions will be used to determine whether survey respondents with different backgrounds and characteristics have different opinions regarding instructional technology and NASA CONNECT.
(Please check the appropriate response.)

99. Gender?

☐ Female ☐ Male

100. Present professional duties?

(Please check all that apply.)

- ☐ Teacher
- ☐ Home Schooler
- ☐ Technology Program Coordinator
- ☐ Principal
- ☐ Math Coordinator
- ☐ Science Coordinator
- ☐ Librarian/Media Specialist
- ☐ Community College Instructor
- ☐ College/University Instructor
- ☐ Distance Learning Coordinator
- ☐ Curriculum Coordinator
- ☐ Other (please specify) _____

101. School type? (Please check only one.)

- ☐ College/University
- ☐ Community College
- ☐ Home School
- ☐ Native American School
- ☐ Private/Parochial
- ☐ Public

102. School location? (Please check only one.)

- ☐ Rural
- ☐ Suburban
- ☐ Urban

103. Highest degree?

- ☐ High School Diploma/Equivalency
- ☐ Associates (2-year)
- ☐ Baccalaureate (BA/BS)
- ☐ Masters/Masters Equivalency
- ☐ Education Specialist
- ☐ Doctorate

DEMOGRAPHICS

104. Ethnicity? (Please check only one.)

- ☐ African American
☐ Asian
☐ Caucasian
☐ Hispanic
☐ Native American
☐ Pacific Islander
☐ Other (please specify) _____

105. How many years have you been a professional educator? (Please enter number below.)

106. Your age? (Please enter number below.)

107. Do you own a personal computer?

- ☐ Yes ☐ No

108. Are you a member of a professional (national) education organization (e.g., ASDC, NMSA, NCTM, NSTA)?

- ☐ Yes ☐ No

109. Number of years you have used NASA CONNECT (Please enter a number below.)

Thank you for your assistance.

In appreciation for having assisted us, we are pleased to offer you a copy of the 2000-2001 NASA CONNECT assessment report. To receive your free copy of the assessment report, please check the box to the right. ☐

With your assistance, the NASA Langley Research Center is providing the educational community with quality integrated mathematics, science, and technology instructional distance learning programming for grades 5-8.

Please return to
NASA CONNECT
Mail Stop 400
NASA Langley Research Center
Hampton, VA 23681-2199

Appendix B

Comments Returned With Blank Evaluation Booklets

Serial number	Inappropriate: If recipients of the 2000–2001 NASA CONNECT™ evaluation booklet were unable to adequately assess the program and its components (i.e., they were not able to fit the program into the curriculum), they were asked to write “inappropriate” on the front of the booklet. The following are additional comments respondents included.
---------------	---

39	yes
49	Yes. As I have changed positions this year and have not been in the classroom, I have not used NASA Connect™. I have passed the information on to other teachers
85	Yes, I am sorry. I am no longer teaching science and was not able to use the program which seems excellent.
100	I have found this to be too advanced for my students. Thank you for all your hard and excellent work. Please drop me from this program.
160	Yes
163	Yes
186	Yes
218	Yes
266	Yes; Do not use anymore *Please remove me from your mailings, thanks.*
278	Yes; I didn't use this year. Teaching second grade instead of fifth grade.
306	I was not a participant in the NASA Connect™ program this year because I had 2nd. Grade. Thanks-
370	I would like to be removed from your mailing list as I am now teaching life science. I also receive mail under the following. Thank You
381	Yes
387	Thanks! We really enjoy participating!!
409	I did not use materials received. Too advanced for age of students in my class.
438	No longer at this school. Please remove from the database.
450	Yes; I teach grades 9–12.
478	Yes
564	Yes; Carrie is no longer here and I don't know anything about this program.
566	Yes
603	Yes
606	Please remove me from your mailing list. The materials were too difficult for 4th and I passed them on to the Jr. High Science teachers! Thanks!
622	Yes. This is my second year as principal. I didn't take a survey this fall. Are these the items that have activities that are sent to 3–6 teachers? I don't think that I can fairly answer this. Please send information about it.
624	Yes
635	We received the survey and we don't recall registering for it! Send info so we can see what it is about.
691	Yes; Our Satellite went down in the fall; therefore, I wasn't able to record any showings. The paper material was handed out to the teachers to use as best as they could. Its a great program, hopefully we can utilize it next year!
704	Yes

742	Because of lack of interest and utilization on part of staff, please discontinue our participation.
751	Yes
782	I was given your materials by a co-worker. I have looked over your program but am missing something & not sure how to use it. I'll keep looking.
830	Yes
846	I passed my packet on to a higher level. This doesn't fit well into our curriculum and it is too difficult for 5th grade.
912	Yes, I teach 4th grade.
985	Yes
1054	Yes
1055	Though I signed up for NASA Connect™ this year, I didn't use the program. I plan to next year however.
1097	Dear Dr. Pinelli, It is much to my regret that I did not utilize the NASA Connect™ materials for which I registered. A family illness required that I take family medical leave for 3 months. Please find enclosed the evaluation booklet you sent in April, when I was out of school and not checking my mail. As the new school is beginning in mid-August, I am organizing last-year's materials, including mail, and finding several things I'm sorry to have missed. The materials are in my "outer space" shelf and I will examine them during the 2001–2002 school year. Please accept my apologies for registering and then not using the 2000–2001 NASA Connect™ program series.
1171	I served as Principal from Jan. 2, 2001–May 25, 2001. That didn't allow me enough time to be able to answer your questions fairly. Thanks
1399	Yes, on leave

Appendix C

Solicited Comments to Qualitative Questions

Serial number	Question 17: If you used programs in the 2000-2001 NASA CONNECT™ series, please indicate how they were used. If they were used in a manner not specified (see question 17 in “Assessment Report Charts and Graphs”), respondents were asked to specify how they were used. The following are the comments generated from that question.
---------------	---

174	Yes, science fair
460	Inappropriate
463	To supply some additional information/back-up lessons
492	Did not use videos. I passed them on to the honors teachers for math.
680	Could not receive the videos
905	Yes; students that pretested out of regular curriculum
939	Yes
1071	Yes; Students that pretested out of regular curriculum

Serial number	Question 18: If you used programs in the 2000-2001 NASA CONNECT™ series, please indicate how they were received. If they were received in a manner not specified (see question 18b in “Assessment Report Charts and Graphs”), respondents were asked to specify how they received the programs. The following are the comments generated from that question.
---------------	--

1021	Did not receive video
732	Didn't—Media Specialist taped
463	I wish NASA would send tapes.
372	Unreadable
1457	N/A
444	Never able to get it
802	No
1419	No
623	Unreadable
755	We don't have a satellite.

Serial number	Question 37: If you did not use the lesson guides for the 2000–2001 NASA CONNECT™ programs, please explain.
---------------	---

31	Time limitation
59	My teacher assignment changed this year and I did not teach Space this year. I will probably be teaching space next year.
66	Currently instructing Life Science. Shared the info with Algebra Teachers.
174	My subject matters this year did not allow use of this material, but my teaching load next year should.
285	Did not get to these lessons, but will use the guides when I use the lesson.
286	The makeup of my class was “interesting” & “challenging”!
310	I did not receive the guides for this program
328	I did not make use of any of the programs because they do not fit my curriculum in 7th grade.
363	Never received another packet after the first
387	Used guides separate from tapes since we did not get tapes till later.
444	Not able to get video programs so didn't use teaching guides; they looked so useful though
463	Not part of present curriculum
481	I didn't feel I had enough time to plan my unit and incorporate the Connect activities in. Would like to re-examine during the summer months when school is not in session & effectively plan and use.
549	I was unaware of this when I took over science from the previous teacher
618	Too hard to put it all together
636	Showed as a special interest only
688	Time not available to pursue extension of these videos.
718	Too hard for my students to understand
731	Not enough time in curriculum
735	Too hard
741	Too difficult for my students
742	Lesson guides were distributed to staff. Not sure how many were used.
755	Too hard for 4th graders
802	I don't teach geometry, doesn't fit into curriculum
810	Used-integrated into current curriculum- Either did not teach that area or already covered that topic when received
895	Did not use #4 or 5 in class as an activity
926	I used part applicable to my class
984	I was not aware how. I wish to use them.
1037	Our teachers do not have time to incorporate programs into the day. They are also above fourth grade level
1040	With the ensuing pressure of the SOLs There wasn't enough time to incorporate anything else into the curriculum.
1082	Problems getting the program taped
1128	Previewed tapes and adapted to my students
1140	If I had the tapes for each lesson I would use them
1151	Again- time limited to reviewing
1181	Math too difficult for students I had this year. Most were Less than 25 percentile
1230	They arrived after subject was taught. Prior knowledge would have avoided this problem
1302	Used a hands-on activity to support Technology Education

Serial number	Question 37: If you did not use the lesson guides for the 2000-2001 NASA CONNECT programs, please explain.
---------------	--

1339	I will get them in the future.
1349	I did try to find programming but was not able to. I read each guide as sent and would like to use—some of it would work very well—just not enough time to work in it
1381	I did not use these programs.
1457	Never got them
1600	Did not get tapes for programs

Serial number	Question 45: Please add any other comments you have concerning the lesson guides.
---------------	---

363	Did not receive any after initial mailing.
492	I shared these materials with the honors math teachers.
587	I have no internet access at my inner city school.
718	I wish you would have remembered the lower level students.
742	Staff expressed time factor and emphasis on SOLs as a major factor for not being able to integrate or utilize information.
755	I wish more basic items were available also. I teach fourth grade and need a little less complexity in some lessons.
764	Thank you for providing such wonderful “teacher Friendly” lessons.
1181	I would love to see the same information but at a lower math level. The ideas were great but too difficult for the students I had this year. Hopefully, I will be able to use them next year.
1419	Please add a wider range of activities for the lower grades—most activities were too complicated for my students in 5th grade- Thanks!
1600	I thought Lesson Guides looked good but had no video ACC to use with guides 99–2000 guides great.

Serial number	Question 47: If you did not use the classroom activities for the 2000-2001 NASA CONNECT™ programs, please explain.
31	Time
59	My teacher assignment changed this year and I did not teach Space this year. I will probably be teaching space next year.
174	Same as #37
285	Did not use these lessons, yet.
310	Did not receive Information
328	Did not use programs
372	Unable to access related web activities. Students had trouble with performing activities
387	Ran out of time for curriculum supplement.
444	Again, no programs!
463	Not part of the curriculum
481	I didn't feel I had enough time to plan my unit and incorporate the Connect activities in. Would like to re-examine during the summer months when school is not in session & effectively plan and use.
549	Took over science from another teacher. She handed me the material received but no background info
587	Difficulty in getting video made and wading thru material-time factor
618	Unable to work into the schedule
623	I wanted to see where they fit best into curriculum before I tried them in the classroom
636	No time
675	Does not fit my curriculum this year
680	Hope to implement after school group next year so we'll have time to access & use this resource
688	Time
735	Too hard for 6th graders
741	Some were difficult
810	Used-integrated into current curriculum- Either did not teach that area or already covered that topic when received
878	Didn't fit Curriculum at time received
895	Did not use #4 or 5 in class as an activity
926	Just did not get to it because other programs were more pressing
984	Need Help!
1037	Our teachers do not have time to incorporate programs into the day. They are also above fourth grade level
1040	No time to include into the Curriculum
1082	Problems obtaining the tape; no (!!!) internet access! Would you care to adopt or PLEASE supply an inner city teacher with 35 remote wireless access to the net? PLEASE!!
1128	Time constraints prevented the activity form being fully utilized; modification was used to integrate lessons
1151	Limited time-only reviewed
1181	Math too difficult for students I had this year. Most were Less than 25 percentile
1222	Did not have time to incorporate all into my curriculum.
1230	Arrived after lesson was taught
1302	Used a hands-on Activity to support Technology Education

Serial number	Question 47: If you did not use the classroom activities for the 2000-2001 NASA CONNECT™ programs, please explain.
---------------	--

1313	The activities were great, just a bit difficult for my 5th graders
1349	I did try to find programming but was not able to—I read each guide as sent and would like to use—some of it would work very well—just not enough time to work it in
1457	Never got them

Serial number	Question 52: Please add any other comments you have concerning the classroom activity.
---------------	--

387	More!! Kids love the hands-on experience to show a point.
645	The classroom activities were age appropriate. Was a little difficult to modify for learning disabled students.
764	The Children
792	Activities were adapted to fit our course work.
878	These are great
905	Not all of my fourth graders could handle the mathematics or understanding. I have students reading from a range of 1st. grade–high school level in the same classroom.
1181	I would love to see the same information but at a lower math level. The ideas were great but too difficult for the students I had this year. Hopefully, I will be able to use them next year.

Serial number	Question 54: If you did not use the web-based activities for the 2000–2001 NASA CONNECT™ season, please explain.
16	Time
31	Time; Computer Access
54	Didn't have enough time in the school schedule.
59	My teacher assignment changed this year and I did not teach Space this year. I will probably be teaching space next year.
65	Time Element–Encouraged students to use on Computer at home
170	No time/Not enough Comp.
174	Same as #37
181	Times did not work well with my schedule
190	We don't have it in our Classroom
232	Lack of Connections to Video display
286	Time constraints–Internet down–other teachers needing my computer or lab
310	I did not know of these programs
328	Did not use the program
372	We could not access from school.
387	No web access or unable at the time
428	Hard to find available computers
444	No video programs!
481	I didn't feel I had enough time to plan my unit and incorporate the Connect activities in. Would like to re-examine during the summer months when school is not in session & effectively plan and use.
499	Have not used – I hope to use in near future
538	Simply-time!
549	Unaware of programs
589	Not enough computers
618	Unable to connect at given times
623	I did not have the opportunity to work on the web-based activities
636	No time
645	Not enough time in day. Not enough computers in room
673	Do not have internet access in classrooms
675	Did not access
679	Lack of computer time for the students
680	Hope to implement after school group next year so we'll have time to access & use this resource
718	I need time to do them myself before I let student try it
732	Only one computer
735	Didn't have time
741	No internet connection until recently
750	Time limitations
755	Not enough time
802	I will incorporate new curriculum for next year
810	Have not had time to view
895	Too advanced and didn't meet my curriculum's needs
905	Did not have the computers at beginning of school but we do now.

Serial number	Question 54: If you did not use the web-based activities for the 2000–2001 NASA CONNECT™ season, please explain.
---------------	--

926	Referred students to activities
958	Computer difficulty throughout the year
959	No time for # 5
984	Could not get it to connect.
1037	Our teachers do not have time to incorporate programs into the day. They are also above fourth grade level
1040	No time to include into the curriculum
1043	Technology problems
1082	No Internet! Isn't that shameful?
1108	Did not take the time to go to these sites–others may have been used.
1128	Lack of available computers and time
1151	Did not have time to incorporate into schedule Too much prep for MEAP Tests
1162	No access to computer @ that time
1181	Math too difficult for students I had this year. Most were Less than 25 percentile
1211	I did not know it was available
1222	Time was a factor
1230	Did not have time to adequately evaluate.
1238	Not enough time or computer access
1302	Not Networked to Internet in the Lab
1313	Lack of computer access
1321	Did not have access to them
1349	I did try to find programming but was not able to read each guide as sent and would like to use–some of it would work very well–just not enough time to work in
1394	No classroom web access
1457	Never got to access them
1600	Same as before–No videos with programs–did not do. I would have liked to.

Serial number	Question 70: Please add any other comments you have concerning the web-based activity.
---------------	--

328	Did not make use of the programs
387	We are hoping we can do this next year
492	I am new to the school and therefore was unaware of all that NASA Connect has to offer.
636	In Sept. I will be at a new school teaching 7th and 8th grade math and science. I believe this will make your programs more useful to me than in my past situation
755	Perhaps different levels of activities could be included on the web.
926	I had 37 students & only 5 computers plus all the other demands of 6th grade curriculum. Wish I could devote more time to the NASA Programs
1313	When students had time in study hall, but was not a class directed activity because of the lack of computers
1419	Our computer lab had difficulty hooking up on the internet. I plan to use the web resources in the upcoming school year

Serial number	Question 97: Respondents were asked to check what objectives they had for student computer use in the classroom. If the respondents checked "other," they were asked to describe the "other objective." The following are the objectives generated from that request.
---------------	---

732	Do not use, class too big
755	Research
796	Research
905	Moving from teacher directed to student directed classroom
1040	spread sheets and databases
1302	Research, link modules to appropriate web sites i.e. Aerospace-NASA
1600	Globe Program

Serial number	Question 100: Respondents were asked to mark their present professional duties on a checklist. If the respondents marked "other," they were asked to specify their "other" professional duty. The following are the duties generated from the question.
---------------	---

59	Software Specialist
459	Yes
460	Football and Lacrosse Coach
492	Gifted Specialist
675	Other-Department Chair
680	Coordinator of gifted program
719	Industrial Technology
1181	Dept. Head
1321	Special Education

Serial number	Question 104: Respondents were asked to mark their ethnicity from a checklist. If the respondents marked "other," they were asked to specify. The following comments were generated from this inquiry.
---------------	--

59	11
673	Other
1128	Human

Appendix D

Unsolicited Comments

Serial number	Additional Comments
92	I received some of the materials because addressee had transferred. I am interested in using the program in the future
372	Pg.3—If at all possible, please send me a copy of the taped programs and lesson guides. We'd like to use more of them! Pg. 14-15—Our server could not handle the site. We kept getting thrown off on our end.
460	Pg. 4 & 5—I have not used any of the NASA programs—that's one of the reasons I wrote for information *I currently teach 9th grade—request Earth Science—any materials available?
492	Pg. 14—Have not viewed the website.
538	My sincere apology for the lateness of this response. Kindly keep me in your program. My school location has changed—please see left. Thank you, Joan Parkland School 1010 English Rd. Rochester, New York 14616
549	Please send me more info about it – don't know about it and am interested. Thanks.
636	Please change my info for the 2001–2002 school year. I do not yet have an e-mail address there. Page 17-Question #94 TECH CTR - 1 per computer—very limited access **Last Year—I will have most or all in both classroom & School in Sept.
1037	Please remove me from your mailing list. We are a K-4 school. Thanks
1143	This past year—plus I was extremely involved in a program of developing inquiry in my classes. Due to this, I just placed all NASA CONNECT materials in my file-untouched. It's my sincere hope to explore the materials at some time in the future. Sorry. Please notice the address change on the envelope enclosed. Our school is moving.
1302	Pg. 19 - Question 98 F. Will be added School year 2001-2002 Digital Photography. Pg. 19 Question 98 H—Violates County Policy
1457	Pg.19 –I am only receiving some of this material—not all
1600	Page-4 I was unable to get tapes for 2000-2001. This year I used Measurement of all Things Proportionality 1999-2000—Classroom, SCI Club + summer 2 programs.

Appendix E

Longitudinal Data

Instructional Programming and Technology in the Classroom

Instructional technology enables teachers to teach more effectively.

	98-99	99-00	00-01	
				Longitudinal mean
Mean	4.51	4.55	4.44	
Median	5.00	5.00	5.00	
Standard deviation	0.76	0.71	0.77	4.50
Minimum	1.00	2.00	3.00	
Maximum	5.00	5.00	5.00	
Count	290.00	263.00	123.00	
No opinion	4.00	0.00	0.00	

Instructional technology enables teachers to accommodate different learning styles.

	98-99	99-00	00-01	
				Longitudinal mean
Mean	4.51	4.51	4.58	
Median	5.00	5.00	5.00	
Standard deviation	0.73	0.69	0.61	4.53
Minimum	1.00	2.00	2.00	
Maximum	5.00	5.00	5.00	
Count	293.00	263.00	123.00	
No opinion	1.00	0.00	1.00	

Instructional technology enables teachers to be more creative.

	98-99	99-00	00-01	
				Longitudinal mean
Mean	4.55	4.66	4.61	
Median	5.00	5.00	5.00	
Standard deviation	0.74	0.56	0.65	4.61
Minimum	1.00	2.00	2.00	
Maximum	5.00	5.00	5.00	
Count	293.00	262.00	124.00	
No opinion	0.00	1.00	0.00	

Instructional technology increases student learning and comprehension.

	98-99	99-00	00-01	
				Longitudinal mean
Mean	4.41	4.44	4.30	
Median	5.00	5.00	5.00	
Standard deviation	0.75	0.70	0.81	4.38
Minimum	2.00	3.00	2.00	
Maximum	5.00	5.00	5.00	
Count	289.00	263.00	124.00	
No opinion	5.00	0.00	0.00	

Instructional technology increases student willingness to discuss content/exchange ideas.

	98-99	99-00	00-01	
				Longitudinal mean
Mean	4.23	4.29	4.18	
Median	4.00	4.00	4.00	
Standard deviation	0.88	0.79	0.86	4.23
Minimum	1.00	2.00	1.00	
Maximum	5.00	5.00	5.00	
Count	292.00	256.00	123.00	
No opinion	2.00	6.00	1.00	

Instructional technology increases student motivation and enthusiasm for learning.

	98-99	99-00	00-01	
				Longitudinal mean
Mean	4.51	4.50	4.45	
Median	5.00	5.00	5.00	
Standard deviation	0.73	0.66	0.70	4.49
Minimum	2.00	3.00	3.00	
Maximum	5.00	5.00	5.00	
Count	291.00	261.00	124.00	
No opinion	2.00	1.00	0.00	

Instructional technology is effective with virtually all types of students.

	98-99	99-00	00-01
Mean	4.07	4.02	3.98
Median	4.00	4.00	4.00
Standard deviation	1.05	1.01	1.09
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	287.00	262.00	124.00
No opinion	7.00	1.00	0.00

Longitudinal mean

4.02

Increasingly, schools have greater access to instructional programs.

	98-99	99-00	00-01
Mean	4.25	4.01	4.10
Median	4.00	4.00	4.00
Standard deviation	0.85	0.98	1.01
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	290.00	261.00	124.00
No opinion	3.00	3.00	1.00

Longitudinal mean

4.12

The majority of these programs are of good quality.

	98-99	99-00	00-01
Mean	3.86	3.76	3.94
Median	4.00	4.00	4.00
Standard deviation	0.92	0.88	0.84
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	284.00	254.00	123.00
No opinion	10.00	9.00	2.00

Longitudinal mean

3.86

The majority of these programs are not appropriate (i.e., too advanced or too basic for my students).

	98-99	99-00	00-01
Mean	2.65	2.89	2.57
Median	3.00	3.00	2.00
Standard deviation	1.10	1.15	1.07
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	272.00	244.00	122.00
No opinion	21.00	19.00	3.00

Longitudinal mean

2.70

The majority of these programs are not easily broken into “teachable” units.

	98-99	99-00	00-01
Mean	2.78	2.91	2.64
Median	3.00	3.00	3.00
Standard deviation	1.24	1.23	1.10
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	275.00	245.00	120.00
No opinion	19.00	20.00	4.00

Longitudinal mean

2.78

Administrators support and encourage teachers to use instructional technology in the classroom.

	98-99	99-00	00-01
Mean	4.13	3.93	4.07
Median	5.00	4.00	4.00
Standard deviation	1.07	1.18	1.09
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	279.00	254.00	121.00
No opinion	15.00	8.00	4.00

Longitudinal mean

4.04

Classrooms are growing increasingly rich in instructional technology.

	98-99	99-00	00-01	
				Longitudinal mean
Mean	3.60	3.68	3.48	3.59
Median	4.00	4.00	4.00	
Standard deviation	1.09	1.13	1.06	
Minimum	1.00	1.00	1.00	
Maximum	5.00	5.00	5.00	
Count	289.00	262.00	125.00	
No opinion	5.00	3.00	0.00	

Teachers are generally positive about introducing/using instructional technology in the classroom.

	98-99	99-00	00-01	
				Longitudinal mean
Mean	3.37	3.38	3.46	3.41
Median	3.00	3.00	3.00	
Standard deviation	1.02	1.10	0.98	
Minimum	1.00	1.00	1.00	
Maximum	5.00	5.00	5.00	
Count	288.00	263.00	124.00	
No opinion	6.00	2.00	0.00	

Which of the following factors are barriers to integrating technology into your instructional program?
(Check all that apply.)

	98-99	99-00	00-01	
No. of Respondents	No data	262.00	120.00	Longitudinal averages
Not enough/limited access to computers		207.00	100.00	
		79.01%	83.33%	
Not enough computer software		152.00	73.00	
		58.02%	60.83%	
Purchased software has not been installed		47.00	13.00	
		17.94%	10.83%	
Lack of time in schedule for tech. Projects		167.00	79.00	
		63.74%	65.83%	
Lack of technical support for tech. Projects		122.00	50.00	
		46.56%	41.67%	
Lack of teacher training opportunities		137.00	63.00	
		52.29%	52.50%	
Lack of knowledge concerning methods of integrating technology into the classroom		130.00	56.00	
		49.62%	46.67%	

Television/Video Programs

Did you use the following programs?

	98-99	99-00	00-01
	No data		
Program 1			
yes		108.00	57.00
no		28.00	15.00
no, but I may in future		109.00	43.00
Program 2			
yes		79.00	37.00
no		33.00	25.00
no, but I may in future		119.00	48.00
Program 3			
yes		66.00	45.00
no		44.00	18.00
no, but I may in future		133.00	51.00
Program 4			
yes		41.00	37.00
no		46.00	25.00
no, but I may in future		135.00	48.00
Program 5			
yes		65.00	20.00
no		37.00	28.00
no, but I may in future		136.00	60.00
Program 6			
yes		52.00	
no		39.00	
no, but I may in future		133.00	
Program 7			
yes		46.00	
no		53.00	
no, but I may in future		132.00	

If you selected “yes” (to having used the video programs) please indicate how these programs were used.

	98-99	99-00	00-01
	No data		
Program 1			
a. to introduce a curriculum topic, objective, or skill		59.00	28.00
b. to reinforce a curriculum topic, objective, or skill		66.00	30.00
c. as a special interest topic		37.00	30.00
d. other		15.00	2.00
Program 2			
a. to introduce a curriculum topic, objective, or skill		32.00	14.00
b. to reinforce a curriculum topic, objective, or skill		51.00	21.00
c. as a special interest topic		26.00	5.00
d. other		9.00	3.00
Program 3			
a. to introduce a curriculum topic, objective, or skill		23.00	18.00
b. to reinforce a curriculum topic, objective, or skill		40.00	27.00
c. as a special interest topic		24.00	9.00
d. other		8.00	2.00
Program 4			
a. to introduce a curriculum topic, objective, or skill		17.00	9.00
b. to reinforce a curriculum topic, objective, or skill		29.00	23.00
c. as a special interest topic		23.00	7.00
d. other		9.00	2.00
Program 5			
a. to introduce a curriculum topic, objective, or skill		28.00	12.00
b. to reinforce a curriculum topic, objective, or skill		37.00	9.00
c. as a special interest topic		26.00	3.00
d. other		7.00	2.00
Program 6			
a. to introduce a curriculum topic, objective, or skill		18.00	
b. to reinforce a curriculum topic, objective, or skill		33.00	
c. as a special interest topic		19.00	
d. other		7.00	
Program 7			
a. to introduce a curriculum topic, objective, or skill		17.00	
b. to reinforce a curriculum topic, objective, or skill		24.00	
c. as a special interest topic		21.00	
d. other		8.00	

If you selected “yes” for having used the video programs, please indicate how these programs were viewed.

	98-99	99-00	00-01
	No data		
Program 1			
a. live		8.00	4.00
b. taped		87.00	42.00
c. both		2.00	2.00
d. not viewed		15.00	9.00
Program 2			
a. live		7.00	1.00
b. taped		69.00	27.00
c. both		2.00	1.00
d. not viewed		14.00	5.00
Program 3			
a. live		6.00	1.00
b. taped		52.00	34.00
c. both		2.00	2.00
d. not viewed		15.00	9.00
Program 4			
a. live		9.00	2.00
b. taped		43.00	24.00
c. both		3.00	1.00
d. not viewed		16.00	10.00
Program 5			
a. live		4.00	0.00
b. taped		56.00	19.00
c. both		2.00	0.00
d. not viewed		16.00	10.00
Program 6			
a. live		5.00	
b. taped		44.00	
c. both		2.00	
d. not viewed		19.00	
Program 7			
a. live		3.00	
b. taped		40.00	
c. both		3.00	
d. not viewed		22.00	

How did you receive the program?

	98-99	99-00	00-01
PBS	No data	46.00	13.00
Downlinked it		18.00	2.00
Media Specialist taped it		56.00	22.00
I, or someone else taped it		42.00	29.00
NASA sent me the tapes		45.00	19.00

Did you experience difficulty obtaining any of the programs in the (2000–2001) NASA CONNECT™ series?

	98-99	99-00	00-01
% who had difficulty	No data		
Yes		50.93%	41.11%
No		110.00	37.00
n =		106.00	53.00
		216.00	90.00

Longitudinal mean

46.02%

If you selected “yes” for having viewed the video programs, please indicate the grade level(s) that viewed the programs.

	98-99	99-00	00-01
Grades			
3rd	19.00	4.00	1.00
4th	75.00	9.00	8.00
5th	97.00	17.00	17.00
6th	92.00	40.00	17.00
7th	70.00	26.00	14.00
8th	78.00	39.00	12.00
9th	14.00	22.00	3.00
10th	7.00	15.00	2.00
11th	5.00	13.00	3.00
12th	5.00	12.00	4.00

The programs were of good artistic quality.

	98-99	99-00	00-01
	No data		
Mean		4.36	4.39
Median		4.00	5.00
Standard deviation		0.70	0.69
Minimum		1.00	3.00
Maximum		5.00	5.00
Count		168.00	71.00
No opinion		43.00	14.00

Longitudinal mean
4.38

The programs were of good technical quality.

	98-99	99-00	00-01
	No data		
Mean		4.49	4.56
Median		5.00	5.00
Standard deviation		0.64	0.60
Minimum		1.00	3.00
Maximum		5.00	5.00
Count		172.00	71.00
No opinion		42.00	15.00

Longitudinal mean
4.53

The programs enabled me to accommodate different learning styles.

	98-99	99-00	00-01
	No data		
Mean		4.17	4.21
Median		4.00	4.00
Standard deviation		0.78	0.83
Minimum		2.00	1.00
Maximum		5.00	5.00
Count		168.00	70.00
No opinion		46.00	15.00

Longitudinal mean
4.19

The programs increased student willingness to discuss/exchange ideas.

	98-99	99-00	00-01
	No data		
Mean		4.18	4.25
Median		4.00	4.00
Standard deviation		0.80	0.74
Minimum		2.00	2.00
Maximum		5.00	5.00
Count		162.00	69.00
No opinion		52.00	16.00

Longitudinal mean

4.21

The programs increased student enthusiasm for learning.

	98-99	99-00	00-01
	No data		
Mean		4.25	4.29
Median		4.00	4.00
Standard deviation		0.76	0.80
Minimum		2.00	2.00
Maximum		5.00	5.00
Count		161.00	70.00
No opinion		53.00	15.00

Longitudinal mean

4.27

The programs were effective with virtually all types of students.

	98-99	99-00	00-01
	No data		
Mean		3.99	3.84
Median		4.00	4.00
Standard deviation		0.96	1.06
Minimum		2.00	1.00
Maximum		5.00	5.00
Count		159.00	70.00
No opinion		54.00	15.00

Longitudinal mean

3.92

The programs were a valuable instructional aid.

	98-99	99-00	00-01
	No data		
Mean		4.44	4.47
Median		5.00	5.00
Standard deviation		0.72	0.68
Minimum		2.00	3.00
Maximum		5.00	5.00
Count		168.00	70.00
No opinion		47.00	16.00

Longitudinal mean
4.46

The programs were developmentally appropriate for the grade level.

	98-99	99-00	00-01
	No data		
Mean		4.06	3.88
Median		4.00	4.00
Standard deviation		0.91	0.81
Minimum		1.00	2.00
Maximum		5.00	5.00
Count		164.00	66.00
No opinion		43.00	16.00

Longitudinal mean
3.97

The programs were easily incorporated into the curriculum.

	98-99	99-00	00-01
	No data		
Mean		4.08	4.03
Median		4.00	4.00
Standard deviation		0.93	0.86
Minimum		2.00	2.00
Maximum		5.00	5.00
Count		160.00	69.00
No opinion		46.00	14.00

Longitudinal mean
4.06

The programs enhanced the integration of mathematics, science, and technology.

	98-99	99-00	00-01
	No data		
Mean		4.55	4.57
Median		5.00	5.00
Standard deviation		0.67	0.61
Minimum		2.00	3.00
Maximum		5.00	5.00
Count		166.00	69.00
No opinion		41.00	16.00

Longitudinal mean

4.56

The programs raised student awareness of careers that require mathematics, science, and technology.

	98-99	99-00	00-01
	No data		
Mean		4.52	4.56
Median		5.00	5.00
Standard deviation		0.69	0.63
Minimum		2.00	3.00
Maximum		5.00	5.00
Count		164.00	68.00
No opinion		43.00	16.00

Longitudinal mean

4.54

The programs demonstrated the application of mathematics, science, and technology on the job.

	98-99	99-00	00-01
	No data		
Mean		4.62	4.61
Median		5.00	5.00
Standard deviation		0.61	0.63
Minimum		3.00	3.00
Maximum		5.00	5.00
Count		165.00	66.00
No opinion		42.00	15.00

Longitudinal mean

4.61

The programs presented mathematics, science, and technology as disciplines requiring creativity, critical thinking, and problem-solving skills.

	98-99	99-00	00-01
	No data		
Mean		4.56	4.68
Median		5.00	5.00
Standard deviation		0.57	0.53
Minimum		3.00	3.00
Maximum		5.00	5.00
Count		165.00	68.00
No opinion		42.00	15.00

Longitudinal mean

4.62

The programs illustrated the integration of workplace mathematics, science, and technology.

	98-99	99-00	00-01
	No data		
Mean		4.59	4.58
Median		5.00	5.00
Standard deviation		0.59	0.60
Minimum		3.00	3.00
Maximum		5.00	5.00
Count		167.00	69.00
No opinion		42.00	14.00

Longitudinal mean

4.58

The programs presented women and minorities performing challenging engineering and scientific tasks.

	98-99	99-00	00-01
	No data		
Mean		4.51	4.47
Median		5.00	5.00
Standard deviation		0.61	0.66
Minimum		2.00	3.00
Maximum		5.00	5.00
Count		162.00	68.00
No opinion		45.00	15.00

Longitudinal mean

4.49

The programs were a positive link between the classroom activity and the web-based activity.

	98-99	99-00	00-01
	No data		
Mean		4.38	4.34
Median		5.00	4.00
Standard deviation		0.74	0.74
Minimum		2.00	2.00
Maximum		5.00	5.00
Count		136.00	64.00
No opinion		71.00	19.00

Longitudinal mean
4.36

Lesson Guides

Did you use the lesson guides for the following programs?

	98-99	99-00	00-01
Program 1	No data		
yes		109.00	65.00
no		23.00	7.00
no, but I may in future		87.00	34.00
Program 2			
yes		89.00	44.00
no		22.00	13.00
no, but I may in future		94.00	42.00
Program 3			
yes		67.00	50.00
no		35.00	14.00
no, but I may in future		104.00	39.00
Program 4			
yes		50.00	42.00
no		32.00	14.00
no, but I may in future		113.00	41.00
Program 5			
yes		66.00	29.00
no		33.00	17.00
no, but I may in future		105.00	48.00
Program 6			
yes		55.00	
no		32.00	
no, but I may in future		109.00	
Program 7			
yes		44.00	
no		43.00	
no, but I may in future		109.00	

The directions/instructions in the lesson guides were easily understood.

	98-99	99-00	00-01
Mean	4.16	4.44	4.28
Median	4.00	5.00	4.00
Standard deviation	0.86	0.76	0.75
Minimum	1.00	1.00	2.00
Maximum	5.00	5.00	5.00
Count	208.00	171.00	85.00
No opinion	1.00	18.00	6.00

Longitudinal mean

4.30

The layout of the lesson guides presented the information clearly.

	98-99	99-00	00-01
Mean	4.28	4.42	4.31
Median	4.00	5.00	4.00
Standard deviation	0.78	0.75	0.75
Minimum	1.00	2.00	2.00
Maximum	5.00	5.00	5.00
Count	208.00	172.00	85.00
No opinion	1.00	19.00	6.00

Longitudinal mean

4.34

The lesson guides were a valuable instructional aid.

	98-99	99-00	00-01
Mean	4.40	4.52	4.36
Median	5.00	5.00	5.00
Standard deviation	0.72	0.71	0.75
Minimum	2.00	2.00	2.00
Maximum	5.00	5.00	5.00
Count	206.00	170.00	84.00
No opinion	3.00	21.00	6.00

Longitudinal mean

4.43

The print and electronic resources in the lesson guide were a valuable instructional aid.

	98-99	99-00	00-01
	No data		
Mean		4.47	4.27
Median		5.00	4.00
Standard deviation		0.70	0.77
Minimum		2.00	3.00
Maximum		5.00	5.00
Count		159.00	81.00
No opinion		30.00	8.00

Longitudinal mean

4.37

The cue cards provided a positive link between the video and the lesson guide.

	98-99	99-00	00-01
	No data		
Mean		4.23	4.16
Median		4.00	4.00
Standard deviation		0.90	0.83
Minimum		1.00	3.00
Maximum		5.00	5.00
Count		124.00	56.00
No opinion		61.00	27.00

Longitudinal mean

4.19

The teacher “background” portion of the lesson guide was a valuable instructional aid.

	98-99	99-00	00-01
	No data		
Mean		4.54	4.48
Median		5.00	5.00
Standard deviation		0.70	0.75
Minimum		1.00	3.00
Maximum		5.00	5.00
Count		158.00	80.00
No opinion		30.00	9.00

Longitudinal mean

4.51

The lesson guide was easy to download from the Internet.

	98-99	99-00	00-01
	No data		
Mean		4.13	4.00
Median		5.00	4.00
Standard deviation		1.23	1.13
Minimum		1.00	1.00
Maximum		5.00	5.00
Count		89.00	34.00
No opinion		95.00	55.00

Longitudinal mean

4.07

Classroom Activities

Did you use the classroom activity for the following programs?

	98-99	99-00	00-01
Program 1	No data		
yes		94.00	60.00
no		27.00	10.00
no, but I may in future		103.00	38.00
Program 2			
yes		74.00	37.00
no		27.00	17.00
no, but I may in future		105.00	47.00
Program 3			
yes		49.00	43.00
no		32.00	15.00
no, but I may in future		126.00	44.00
Program 4			
yes		36.00	38.00
no		30.00	17.00
no, but I may in future		123.00	41.00
Program 5			
yes		53.00	28.00
no		31.00	19.00
no, but I may in future		121.00	45.00
Program 6			
yes		43.00	
no		26.00	
no, but I may in future		122.00	
Program 7			
yes		34.00	
no		33.00	
no, but I may in future		127.00	

The classroom activity (experiment) was easily incorporated into my lesson plan.

	98-99	99-00	00-01
Mean	3.97	4.22	3.92
Median	4.00	4.00	4.00
Standard deviation	0.90	0.89	0.93
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	182.00	134.00	72.00
No opinion	4.00	33.00	12.00

Longitudinal mean

4.04

The classroom activity (experiment) complemented the lesson for each show.

	98-99	99-00	00-01
Mean	4.39	4.46	4.20
Median	5.00	5.00	4.00
Standard deviation	0.71	0.70	0.80
Minimum	2.00	1.00	2.00
Maximum	5.00	5.00	5.00
Count	171.00	124.00	64.00
No opinion	12.00	41.00	19.00

Longitudinal mean

4.35

The classroom activity (experiment) was developmentally appropriate for the grade level.

	98-99	99-00	00-01
Mean	4.22	4.17	3.76
Median	4.00	4.00	4.00
Standard deviation	0.83	0.87	1.08
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	180.00	131.00	72.00
No opinion	5.00	33.00	11.00

Longitudinal mean

4.05

The classroom activities (experiments) were easy for me to use.

	98-99	99-00	00-01
	No data		
Mean		4.49	3.86
Median		4.00	4.00
Standard deviation		3.10	1.07
Minimum		1.00	1.00
Maximum		5.00	5.00
Count		129.00	73.00
No opinion		38.00	10.00

Longitudinal mean

4.18

Web-Based Activities

Did you use the web-based activity for the following programs?

	98-99	99-00	00-01
Program 1	No data		
yes		19.00	6.00
no		62.00	40.00
no, but I may in future		129.00	54.00
Program 2			
yes		18.00	4.00
no		56.00	40.00
no, but I may in future		132.00	55.00
Program 3			
yes		27.00	3.00
no		55.00	40.00
no, but I may in future		136.00	56.00
Program 4			
yes		4.00	15.00
no		63.00	33.00
no, but I may in future		132.00	51.00
Program 5			
yes		14.00	5.00
no		60.00	39.00
no, but I may in future		128.00	54.00
Program 6			
yes		28.00	
no		50.00	
no, but I may in future		135.00	
Program 7			
yes		21.00	
no		58.00	
no, but I may in future		134.00	

The content of the web-based activities was easily integrated into the curriculum.

	98-99	99-00	00-01
Mean	3.98	4.09	3.83
Median	4.00	4.00	4.00
Standard deviation	0.94	1.00	0.79
Minimum	1.00	1.00	2.00
Maximum	5.00	5.00	5.00
Count	59.00	64.00	18.00
No opinion	5.00	55.00	21.00

Longitudinal mean
3.97

The content of the web-based activities enhanced the integration of mathematics, science, and technology.

	98-99	99-00	00-01
Mean	No data		
Median		4.37	3.94
Standard deviation		5.00	4.00
Minimum		0.79	1.00
Maximum		2.00	2.00
Count		5.00	5.00
No opinion		62.00	18.00
		58.00	21.00

Longitudinal mean
4.16

The web-based activities raised student awareness of careers that require mathematical, scientific, and technological knowledge.

	98-99	99-00	00-01
Mean	4.33	4.34	4.17
Median	4.00	5.00	5.00
Standard deviation	0.79	0.81	1.04
Minimum	2.00	2.00	2.00
Maximum	5.00	5.00	5.00
Count	57.00	58.00	18.00
No opinion	7.00	56.00	21.00

Longitudinal mean
4.28

If you selected “yes” for having used the web-based activities, please indicate the grade level(s) that used them.

	98-99	99-00	00-01
Grades	No data		
3rd		2.00	1.00
4th		6.00	3.00
5th		4.00	6.00
6th		14.00	5.00
7th		14.00	5.00
8th		19.00	5.00
9th		9.00	0.00
10th		7.00	0.00
11th		6.00	0.00
12th		4.00	0.00

Students were able to complete the web-based activities in a reasonable amount of time.

	98-99	99-00	00-01
	No data		
Mean		3.86	3.94
Median		4.00	4.00
Standard deviation		1.18	0.83
Minimum		1.00	2.00
Maximum		5.00	5.00
Count		51.00	17.00
No opinion		57.00	18.00

Longitudinal mean

3.90

The web-based activities accommodated various learning styles.

	98-99	99-00	00-01
	No data		
Mean		4.14	4.00
Median		4.00	4.00
Standard deviation		0.93	0.91
Minimum		2.00	2.00
Maximum		5.00	5.00
Count		57.00	18.00
No opinion		54.00	17.00

Longitudinal mean

4.07

The content for the web-based activities was appropriate for my students.

	98-99	99-00	00-01
Mean	3.92	4.04	3.88
Median	4.00	4.00	4.00
Standard deviation	0.89	0.94	0.86
Minimum	2.00	2.00	2.00
Maximum	5.00	5.00	5.00
Count	60.00	57.00	17.00
No opinion	4.00	54.00	17.00

Longitudinal mean
3.95

The graphics for the web-based activities were appropriate for my students.

	98-99	99-00	00-01
Mean	No data		
Median		4.16	4.17
Standard deviation		4.00	4.00
Minimum		0.88	0.79
Maximum		2.00	2.00
Count		5.00	5.00
No opinion		55.00	18.00
		56.00	17.00

Longitudinal mean
4.17

The web-based activities enhanced the integration of mathematics, science, and technology.

	98-99	99-00	00-01
Mean	No data		
Median		4.64	4.17
Standard deviation		5.00	4.00
Minimum		0.69	0.79
Maximum		3.00	3.00
Count		5.00	5.00
No opinion		56.00	18.00
		55.00	17.00

Longitudinal mean
4.40

The web-based activities had a good balance of text and graphics.

	98-99	99-00	00-01
	No data		
Mean		4.32	4.41
Median		5.00	5.00
Standard deviation		0.79	0.71
Minimum		2.00	3.00
Maximum		5.00	5.00
Count		56.00	17.00
No opinion		55.00	18.00

Longitudinal mean

4.37

The web-based activities allowed my students to work at their own pace.

	98-99	99-00	00-01
	No data		
Mean		4.13	4.11
Median		4.00	4.00
Standard deviation		0.86	0.96
Minimum		2.00	2.00
Maximum		5.00	5.00
Count		52.00	18.00
No opinion		58.00	17.00

Longitudinal mean

4.12

The web-based activities will likely be revisited/reused.

	98-99	99-00	00-01
	No data		
Mean		4.36	4.47
Median		5.00	5.00
Standard deviation		0.95	0.72
Minimum		1.00	3.00
Maximum		5.00	5.00
Count		58.00	17.00
No opinion		53.00	18.00

Longitudinal mean

4.42

More online activities should be available on the NASA CONNECT™ web site.

	98-99	99-00	00-01
Mean	4.72	4.64	4.42
Median	5.00	5.00	5.00
Standard deviation	0.52	0.76	0.72
Minimum	3.00	1.00	3.00
Maximum	5.00	5.00	5.00
Count	61.00	81.00	31.00
No opinion	3.00	32.00	8.00

Longitudinal mean

4.59

Did you or your students use Norbert's Lab?

	98-99	99-00	00-01
No Data			
Yes		25.00	5.00
No		86.00	32.00
n =		111.00	37.00

NASA CONNECT™ Web Site

The NASA CONNECT™ web site is visually appealing.

	98-99	99-00	00-01
Mean	4.50	4.58	4.55
Median	5.00	5.00	5.00
Standard deviation	0.62	0.62	0.58
Minimum	3.00	2.00	3.00
Maximum	5.00	5.00	5.00
Count	135.00	166.00	71.00
No opinion	4.00	32.00	19.00

Longitudinal mean

4.54

There is a good balance between text and graphics on the web site.

	98-99	99-00	00-01
Mean	4.38	4.49	4.41
Median	4.00	5.00	5.00
Standard deviation	0.68	0.65	0.71
Minimum	2.00	2.00	2.00
Maximum	5.00	5.00	5.00
Count	127.00	164.00	69.00
No opinion	12.00	37.00	19.00

Longitudinal mean

4.43

The web site is easily navigated.

	98-99	99-00	00-01
Mean	4.34	4.43	4.38
Median	4.00	5.00	5.00
Standard deviation	0.77	0.77	0.79
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	134.00	163.00	69.00
No opinion	5.00	37.00	20.00

Longitudinal mean

4.38

When viewed on my monitor, the web site is clearly legible.

	98-99	99-00	00-01
Mean	4.51	4.58	4.48
Median	5.00	5.00	5.00
Standard deviation	0.61	0.66	0.72
Minimum	3.00	1.00	2.00
Maximum	5.00	5.00	5.00
Count	134.00	164.00	69.00
No opinion	5.00	37.00	20.00

Longitudinal mean

4.52

The web site is designed so that printouts of individual pages are legible.

	98-99	99-00	00-01
Mean	4.45	4.50	4.52
Median	5.00	5.00	5.00
Standard deviation	0.69	0.82	0.59
Minimum	2.00	1.00	3.00
Maximum	5.00	5.00	5.00
Count	116.00	151.00	64.00
No opinion	23.00	50.00	25.00

Longitudinal mean

4.49

Pages within the web site download quickly.

	98-99	99-00	00-01
Mean	3.87	4.09	4.12
Median	4.00	4.00	4.00
Standard deviation	1.04	0.95	0.95
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	121.00	148.00	61.00
No opinion	17.00	53.00	28.00

Longitudinal mean

4.03

The page lengths are appropriate.

	98-99	99-00	00-01
Mean	No data		
Median		4.42	4.33
Standard deviation		5.00	5.00
Minimum		0.68	0.81
Maximum		3.00	1.00
Count		5.00	5.00
No opinion		153.00	66.00
		48.00	23.00

Longitudinal mean

4.38

The links to other sites/pages are current.

	98-99	99-00	00-01
	No data		
Mean		4.41	4.37
Median		5.00	5.00
Standard deviation		0.76	0.74
Minimum		1.00	3.00
Maximum		5.00	5.00
Count		148.00	65.00
No opinion		53.00	24.00

Longitudinal mean

4.39

Overall Assessment

The programs met their stated objectives.

	98-99	99-00	00-01
Mean	4.49	4.54	4.52
Median	5.00	5.00	5.00
Standard deviation	0.66	0.68	0.67
Minimum	2.00	1.00	2.00
Maximum	5.00	5.00	5.00
Count	270.00	188.00	93.00
No opinion	17.00	33.00	12.00

Longitudinal mean

4.52

The program content was developmentally appropriate for the grade level.

	98-99	99-00	00-01
Mean	4.25	4.17	4.08
Median	4.00	4.00	4.00
Standard deviation	0.85	0.89	0.90
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	268.00	196.00	95.00
No opinion	17.00	25.00	10.00

Longitudinal mean

4.17

The program content was aligned with the national mathematics, science, and technology standards.

	98-99	99-00	00-01
Mean	4.61	4.57	4.62
Median	5.00	5.00	5.00
Standard deviation	0.60	0.60	0.61
Minimum	3.00	3.00	3.00
Maximum	5.00	5.00	5.00
Count	257.00	192.00	94.00
No opinion	30.00	31.00	11.00

Longitudinal mean

4.60

The program content was easily integrated into the curriculum.

	98-99	99-00	00-01
Mean	4.09	4.14	3.97
Median	4.00	4.00	4.00
Standard deviation	0.90	1.00	1.00
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	267.00	189.00	94.00
No opinion	20.00	33.00	10.00

Longitudinal mean

4.07

The program content enhanced the teaching of mathematics, science, and technology.

	98-99	99-00	00-01
Mean	4.45	4.51	4.47
Median	5.00	5.00	5.00
Standard deviation	0.69	0.69	0.65
Minimum	2.00	2.00	3.00
Maximum	5.00	5.00	5.00
Count	267.00	193.00	92.00
No opinion	20.00	27.00	12.00

Longitudinal mean

4.48

The programs raised student awareness about careers that require mathematics, science, and technology.

	98-99	99-00	00-01
Mean	4.44	4.54	4.43
Median	5.00	5.00	5.00
Standard deviation	0.68	0.66	0.75
Minimum	2.00	2.00	1.00
Maximum	5.00	5.00	5.00
Count	262.00	190.00	90.00
No opinion	23.00	31.00	15.00

Longitudinal mean

4.47

The programs presented the application of mathematics, science, and technology on the job.

	98-99	99-00	00-01
Mean	4.49	4.55	4.42
Median	5.00	5.00	5.00
Standard deviation	0.67	0.60	0.72
Minimum	2.00	2.00	2.00
Maximum	5.00	5.00	5.00
Count	269.00	193.00	94.00
No opinion	18.00	26.00	11.00

Longitudinal mean

4.49

The programs presented workplace mathematics, science, and technology as collaborative processes.

	98-99	99-00	00-01
Mean	4.42	4.59	4.39
Median	5.00	5.00	5.00
Standard deviation	0.69	0.60	0.78
Minimum	2.00	2.00	2.00
Maximum	5.00	5.00	5.00
Count	267.00	190.00	92.00
No opinion	20.00	30.00	13.00

Longitudinal mean

4.47

The programs presented mathematics, science, and technology as processes requiring creativity, critical thinking, and problem-solving skills.

	98-99	99-00	00-01
Mean	4.58	4.63	4.56
Median	5.00	5.00	5.00
Standard deviation	0.63	0.56	0.68
Minimum	3.00	2.00	2.00
Maximum	5.00	5.00	5.00
Count	270.00	193.00	95.00
No opinion	17.00	28.00	10.00

Longitudinal mean
4.59

The programs presented women and minorities performing challenging engineering and science tasks.

	98-99	99-00	00-01
	No data		
Mean		4.55	4.43
Median		5.00	5.00
Standard deviation		0.63	0.69
Minimum		2.00	3.00
Maximum		5.00	5.00
Count		185.00	90.00
No opinion		36.00	15.00

Longitudinal mean
4.49

Computers and Associated Technology

Do you have the following equipment in your (classroom, school, home)?

	98-99	99-00	00-01
Television			
Classroom	236.00	206.00	97.00
School	184.00	167.00	91.00
Home	220.00	212.00	103.00
VCR			
Classroom	215.00	166.00	92.00
School	195.00	175.00	94.00
Home	219.00	199.00	99.00
Video Camera			
Classroom	40.00	35.00	26.00
School	208.00	172.00	91.00
Home	121.00	98.00	63.00
Laser Disc Player			
Classroom	70.00	47.00	24.00
School	138.00	127.00	64.00
Home	25.00	27.00	10.00
Video editing equip.			
Classroom	9.00	6.00	5.00
School	74.00	66.00	32.00
Home	10.00	13.00	9.00
Computer			
Classroom	249.00	224.00	106.00
School	208.00	180.00	93.00
Home	208.00	203.00	94.00
DVD			
Classroom	No Data	15.00	8.00
School		34.00	17.00
Home		58.00	28.00

Does the computer in your classroom, school, or home have the following items?

	98-99	99-00	00-01
CD-ROM			
Classroom	224.00	153.00	No data
School	193.00	143.00	107.00
Home	196.00	72.00	52.00
Local Area Network			
Classroom	127.00	129.00	No data
School	147.00	129.00	66.00
Home	57.00	53.00	22.00
District-Wide Network			
Classroom	124.00	189.00	No data
School	129.00	178.00	70.00
Home	29.00	188.00	1.00
Internet connection			
Classroom	174.00	210.00	No data
School	185.00	171.00	24.00
Home	168.00	193.00	64.00
DVD			
Classroom	No data	No data	No data
School	No data	No data	No data
Home	No data	No data	No data

How many computers are in your classroom?

	98-99	99-00	00-01
Mean	2.97	3.12	2.82
Median	2.00	2.00	2.00
Standard deviation	4.01	3.82	2.93
Minimum	0.00	0.00	0.00
Maximum	30.00	28.00	18.00
Count	281.00	249.00	117.00

Longitudinal mean

2.97

The operating system used on your school computers is

	98-99	99-00	00-01
Macintosh	100.00	47.00	29.00
Windows	193.00	163.00	76.00
Both	No data	29.00	10.00
Other	No data	3.00	No data

In a given month, about how many times does a typical student use a computer in your class?

	98-99	99-00	00-01
1-5 times	67.00	83.00	49.00
6-10 times	75.00	56.00	12.00
11-20 times	62.00	43.00	27.00
21-40 times	39.00	36.00	16.00
41+ times	22.00	21.00	9.00

Generally speaking, how do the students operate the computers in your classroom?

	98-99	99-00	00-01
1 student/computer	142.00	122.00	47.00
in pairs (2)	130.00	98.00	41.00
in groups of 3-5	63.00	43.00	13.00
as a class	No data	37.00	7.00
other	No data	15.00	1.00

My classroom connection to the Internet uses a _____.

	98-99	99-00	00-01
28.8 modem	35.00	14.00	1.00
56-K flex modem	27.00	21.00	7.00
cable modem	35.00	19.00	18.00
T-1 line	46.00	87.00	31.00
do not have one	60.00	30.00	6.00
do not know	18.00	78.00	39.00

The school-based technology training provided by my school division improved my computer skills.

	98-99	99-00	00-01
	No data		
Mean		3.58	3.65
Median		4.00	4.00
Standard deviation		1.41	1.37
Minimum		1.00	1.00
Maximum		5.00	5.00
Count		203.00	100.00
No opinion		9.00	1.00

Longitudinal mean

3.61

Which of the following are among the objectives you have for student computer use?

	98-99	99-00	00-01
	No data	198.00	99.00
Higher order thinking skills	180.00	139.00	64.00
Mastering skills just taught	180.00	142.00	65.00
Remediation of skills not learned well	191.00	139.00	69.00
Expressing ideas in writing	121.00	101.00	43.00
Communicating electronically with others	227.00	202.00	97.00
Finding out about ideas and information	136.00	166.00	68.00
Analyzing information	114.00	136.00	54.00
Presenting information to an audience	189.00	179.00	83.00
Improving computer skills	168.00	159.00	77.00
Learning to work collaboratively	187.00	169.00	84.00
Learning to work independently			

In which of these ways do you use computers to prepare lessons or in other professional activities?

	98-99	99-00	00-01
a. to record or calculate student grades			
do not use	88.00	51.00	27.00
occasionally	50.00	22.00	29.00
weekly	71.00	52.00	29.00
more often	76.00	129.00	34.00
b. to make handouts for students			
do not use	88.00	5.00	4.00
occasionally	50.00	50.00	30.00
weekly	71.00	73.00	31.00
more often	76.00	128.00	53.00
c. to correspond with parents			
do not use	64.00	63.00	35.00
occasionally	121.00	106.00	51.00
weekly	67.00	40.00	21.00
more often	35.00	43.00	12.00
d. to write lesson plans or related notes			
do not use	55.00	36.00	17.00
occasionally	89.00	60.00	35.00
weekly	77.00	71.00	39.00
more often	64.00	90.00	28.00
e. to get information/pictures from the Internet for use in lessons			
do not use	38.00	21.00	8.00
occasionally	128.00	88.00	49.00
weekly	61.00	58.00	27.00
more often	59.00	90.00	34.00
f. to use camcorders, digital cameras, or scanners to prepare for class			
do not use	134.00	117.00	54.00
occasionally	118.00	92.00	47.00
weekly	24.00	30.00	11.00
more often	10.00	17.00	6.00
g. to exchange files with other teachers			
do not use	149.00	109.00	58.00
occasionally	107.00	99.00	51.00
weekly	13.00	26.00	8.00
more often	16.00	21.00	2.00
h. to post student work, suggestions for resources, or ideas/opinions on the Web			
do not use	201.00	167.00	72.00
occasionally	61.00	60.00	37.00
weekly	16.00	14.00	8.00
more often	8.00	13.00	2.00

Demographics

Gender

	98-99	99-00	00-01
Male	68.00	71.00	30.00
Female	227.00	188.00	89.00
(n) of responses =	295.00	259.00	119.00

*(n) denotes number

Present professional duties?

	98-99	99-00	00-01
Teacher	232.00	238.00	110.00
Home Schooler	7.00	5.00	1.00
Technology Program Coordinator	2.00	19.00	9.00
Principal	14.00	0.00	2.00
Mathematics Coordinator	1.00	13.00	4.00
Science Coordinator	7.00	33.00	23.00
Librarian/Media Specialist	21.00	7.00	7.00
Community College Instructor	0.00	1.00	3.00
College/University Instructor	3.00	8.00	4.00
Distance Learning Coordinator	No Data	3.00	1.00
Curriculum Coordinator	No Data	10.00	2.00
Other	1.00	29.00	8.00

School Type

	98-99	99-00	00-01
College/University	2.00	7.00	1.00
Community College	1.00	1.00	1.00
Home School	6.00	7.00	1.00
Native American	No data	3.00	0.00
Private/Parochial	21.00	7.00	6.00
Public	266.00	232.00	111.00
(n) of responses =	296.00	257.00	120.00

School Location

	98-99	99-00	00-01
Rural	102.00	89.00	38.00
Suburban	108.00	87.00	43.00
Urban	83.00	83.00	37.00
(n) of responses =	293.00	259.00	118.00

*(n) denotes number

Highest Degree

	98-99	99-00	00-01
High School Diploma	2.00	1.00	0.00
Associates (2 year)	2.00	3.00	0.00
Baccalaureate	85.00	77.00	30.00
Masters/Equivalent	200.00	160.00	70.00
Doctorate	8.00	6.00	3.00
Educational Specialist	No Data	12.00	13.00
(n) of responses =	297.00	259.00	116.00

Ethnicity

	98-99	99-00	00-01
African American	22.00	16.00	14.00
Asian	1.00	3.00	0.00
Caucasian	258.00	223.00	101.00
Hispanic	8.00	5.00	3.00
Native American	2.00	2.00	0.00
Pacific Islander	0.00	1.00	0.00
Other	1.00	6.00	1.00
(n) of responses =	292.00	256.00	119.00

Years as Educator

	98-99	99-00	00-01
Mean	16.30	14.95	17.78
Median	15.00	13.00	17.00
Standard deviation	9.19	10.26	8.81
Minimum	1.00	0.00	3.00
Maximum	49.00	55.00	34.00
Count	292.00	256.00	120.00

Longitudinal mean

16.34

Age

	98-99	99-00	00-01
Mean	44.94	43.90	45.85
Median	46.00	45.00	47.00
Standard deviation	8.70	9.10	7.96
Minimum	23.00	22.00	25.00
Maximum	75.00	62.00	60.00
Count	282.00	250.00	110.00

Longitudinal mean

44.90

Do you own a personal computer?

	98-99	99-00	00-01
Yes	270.00	241.00	113.00
No	26.00	15.00	7.00
(n) of responses =	296.00	256.00	120.00

*(n) denotes number

Member of a professional organization?

	98-99	99-00	00-01
Yes	159.00	192.00	87.00
No	138.00	63.00	30.00
(n) of responses =	297.00	255.00	117.00

Years with NASA CONNECT™

	98-99	99-00	00-01
Mean	No data	1.10	2.44
Median		1.00	2.00
Standard deviation		0.55	1.28
Minimum		0.00	0.00
Maximum		4.00	8.00
Count		253.00	114.00

Longitudinal mean

1.77

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14. ABSTRACT This report contains the results of the evaluation conducted for the 2000-2001 NASA CONNECT™ program conducted in March 2001. The analysis is based on the results collected from 154 surveys collected from educators registered for the program. Respondents indicated that the objectives for each program were met; the programs were aligned with the national (mathematics, science, and technology) standards; the programs were developmentally (grade level) appropriate; and the programs in the 2000-2001 NASA CONNECT™ series enhanced/enriched the teaching of mathematics, science, and technology.					
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